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February 1988

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THAT'S D E R
DOES YOURS
DO THAT

commodore

HORIZON

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Submitting articles

Commodore Horizon welcomes readers' contributions — either articles or program listings. Articles should be typed double spaced with a wide margin. Programs should, whenever possible, be printed out on plain white paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted, so please keep a copy. If you want to have your program returned, you must include an S.A.E.



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EDITORIAL

COMPUTER, MICROSOFT AND THE like are held systems now available to Commodore users, see if the following modern computer technology has, though this may be slow to happen, to benefit development. It will, but don't think the sight of a monitor will be usually accompanied by that of a working hard disk and a fast keyboard.

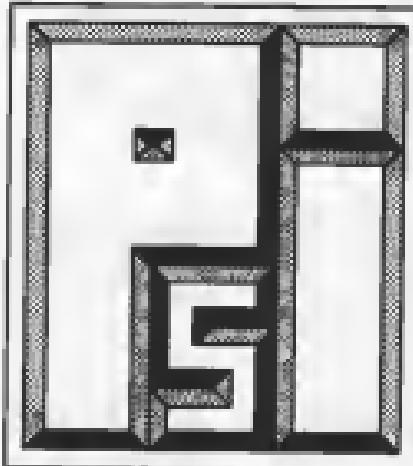
It costs more production and the development of the monitor for the user to pay to access. In much the same way an increase in the sheer number of network users will require increased hardware and technical development to be carried through.

At the moment, for instance, the high replication charges involved in networks cost many potential users. If special rates could be negotiated there would be much value. At the same time, there are technical problems with the approach that encourage users. Computer's download rates are slow, and it is the memory space taken up by the modem itself may limit the use of various protocols. This might imply that the small business market, which should form part of Commodore's subscriber base, would be limited.

At the same time there are legal questions to be settled. Is a network system responsible for material uploaded on to Commodore machines, or is the user responsible? That is the question we have to ask ourselves. Whether or not it works is regarded as ultimate proof. Equally responsible for whatever material it holds will have to be decided before long. It is just one of the ways in which society has not adjusted to the new age, though our daily life is sure, over the enforcement of such unadjusted responsibility is unlikely.

BEYOND

CHALLENGING SOFTWARE



WARRIOR

ORIGINALITY 10 • ORIGINALITY 10 • ORIGINALITY 10 • ORIGINALITY
GRAPHICS 10 • GRAPHICS 10 • GRAPHICS 10 • GRAPHICS 10 • GRAP
SOUND 10 • SO
LASTING INTEREST 10 • LASTING INTEREST 10 • LASTING INTEREST
ANIMATION 10½ • ANIMATION 10½ • ANIMATION 10½ • ANIM
OVERALL 11 • O

COULD IT EVER HAPPEN?



notes all at the same time!

■ As the press of a button you can summon up pre-programmed rhythms and bass accompaniments to play along to ■ These three rhythm combinations can be speeded up or slowed down

■ You can even crescendo (so long as you don't hurt yourself!) ■ That is, make a note fade up in pitch

■ You can filter sound reduce the treble, the bass, or both. You can save on cassette or disk a voice or tune for future use

■ And, for better sound reproduction you can connect

MAKE MUSIC YOUR FORTE.

■ Alright, let's all gather round the computer for a good old sing-song

■ You'll find the new Commodore 64 Music Maker strikes exactly the right note, whether you're an accomplished musician or whether you are an out-and-out beginner

■ If you can hum and know your ABC, you can start to play famous popular tunes immediately

■ No matter if you've never played a note before

■ Simply type in the notes from the SPX Tutor Handbook,

■ **Music Maker** is in column 11111

then tap in the rhythm:

■ And, before you can even say 'Richard Clayderman', the automated playback fills the room with music

■ Once you've become a 'piano' virtuoso, you'll quickly appreciate the Music Maker's other amazing capabilities

■ You can synthesise musical instruments, even create your own synth electronic sounds

■ You can play notes polyphonically

■ This is the smart way of saying you can play three different

Music Maker to your hi-fi system

■ Music Maker has been designed to allow software to get the very best out of Commodore hardware

■ It's the first in a series of packages which will fully exploit the Commodore 64's outstanding musical capabilities

■ Commodore software it costs no more, even though there's more to it



LETTERS

PAGE

Thanking YOU

DEAR Computer user,

However, I am wondering at which computer to get. I am 100% sure that I'm getting a Commodore.

If you have any further and additional details you could tell, I would be more than pleased to get some.

Please could you give me details on the last time I had needed software? I had to pay for the basics, so if you could send me details.

Thinking you,

Ray Attwells

London

WE ARE not leaving the BBCB! Try making
Comments for the leaders
Thinking you

Print At ideas

YOU MAY be interested in the C64's *PRINT AT* function which lets you print the additional machine code routines.

To print or output to a specific port, use the command *PRINT #1* to the column required, 0 to 39. Let

V = the row required, 0 to 24. Then *CODE#1* in the PLOT routine, which can be placed at any suitable point in the program and is as follows:

POKE#1614 POKE#14,

T#328732 RETURN

The values of X and Y can be modified as required during the program.

Tony Lowe

Abingdon

Oxfordshire

Reset

defeated

RECENTLY I have to stop Paul Mayle's *reset attack* (December issue). Below the following assembly language routine: 37761
vars.
37762 A,
37763 B,
37764 C,
37765 D,
37766 E,
37767 F,
37768 G,
37769 H,
37770 I,
37771 J,
37772 K,
37773 L,
37774 M,
37775 N,
37776 O,
37777 P,
37778 Q,
37779 R,
37780 S,
37781 T,
37782 U,
37783 V,
37784 W,
37785 X,
37786 Y,
37787 Z.

where A is the low byte of the address of a machine code program, to handle the fact that the reset switch has been pressed, and B is the high byte.

This a listing on some-
where else: 37761 to
address A \$1.

For instance, enter the code with A=6, B=102, then
POKE 483256. Type a small
program like: 1000
RETURN and press the
reset switch. The screen
should clear, but you can still
LIST your program.
Anon. Wilmslow

RAY England
Wolverhampton

Stony Alder,
Liverpool
Merseyside

WE, 44 Superuser users now
offer a version of the Flight Simulator II on tape, which
wasn't available at the time
our disk version was written.
The disk version uses a
commercial source principle,
with new sections of the
simulation being loaded in the
program constantly.

We can only assure that
the tape version is substantially
the same, but fails to include all separate
sections. We're trying to
get hold of a tape version to
check it and we will do
this as soon as possible.

Boogo- boo-hoo

12½ months ago I purchased
the great game Boogo-Boo the
Fox from Quadrant.

However, after reaching the
end of the game, I cannot find
any way to jump through the
overhang. Could anyone send
me info on how to do this
or let me know what to do?

Philip Atchley

South Africa

SA2000

1989 isn't the only year
we've had making the same
question. Anytime you see
me, ask me! ^

Flying tote

IN THE DEC 1988 December issue
you reviewed the supposedly
fun game *Sophie's Flight*.

However, I am 2 programs old, and I
am very interested in buying a
copy. However, you say the
because of the complexity of
the program it's only
available on disk, and I don't
own a disk drive. Yet in the
same issue the same supplier
from whom you obtained the
review copy on disk are
advertising a version on
cartridge (page 18, see
Suppliers C1).

I would be most grateful if
you could explain the
apparent contradiction, and if
you could tell me if the
cartridge version differs in any
way from the disk.

£10 prize letter

WE ARE looking for
all busy people with plenty to
do, we're offering you letters
to spread your valuable time
working in Commodore
Hardware. Each month we'll
offer a £10 prize for the most
interesting letter on hardware,
software, computing, or life
in general. The half :o) is your
prize... get writing!

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your views — send
your tips, complaints
and contributions to
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Commodore Hardware,
18-19 Ulster Street,
London
WC1H 7PF

COMPUTER



COME BILLY I'VE
WRITTEN A EAST
ANGLIANALOGUE

I CAN'T
PURSUE



YOU
CONTROL
A LITTLE
YELLOW THING
AROUND A



WHAT DAYA MEAN
IT'S ALREADY BEEN
INVENTED???

Collins goes soft

BRITAIN'S largest educational book publisher, Collins, has set up a software imprint, Collins Soft. The first seven titles in the *Bookpower* range of programs from Troposoft prove to be the ones in the catalog. These seven *Bookpower* titles will be available from Collins Soft from January 1st, and further titles are now pre-production.

Troposoft titles cost £19.95 on tape and £24.95 on disk. Titles on the list include *Entrepreneur*, *Business at Work*, *Decision Making*, *Sales*, *Marketing*, *Project Planning* and *Financials*.

Each title is intended to help educate, develop, put their knowledge to a practical application. Each contains a tutorial module and program, and Collins Soft's publisher, Graham Taylor, promises to carry on as an attempt to "enhance the structure and form of software development away from games and computer literacy" in software that already does something." Contact Collins Soft at 8, Grafton Street, London W1X 8LA. 01-583 7810.

Cheat sheets

PRINCETON PUBLISHING COMPANY'S *Cheat Cards* are now available through bookshops at £1.99. The hand-sized folding reference leaflets cover subjects such as key words, operating commands, graphics and sound commands, color codes, basic commands, logical operators, editor messages, and general troubleshooting tips.

The *ComputerArt* £1.99 version also includes a full list of PC/T graphic characters, 800 color registers and ASCII character codes.

For more details contact Phoenix, 14 Vernon Road, Basildon, Essex, SS1 2JL, phone 0322 33109.

Record-breaking US software



FOLLOWING the lead of Texas and Israel, another record company has opened a software subsidiary.

American Arachne latest debuts with a series of packages from the US house Breakthrough and Electronix

Arts. The initial Breakthrough series which made the top ten in the US billboard chart, all of which are for the Commodore 64.

This includes *Breakdown*, in which you have to pilot a helicopter on a rescue mission

when 40 UN delegates are held captive; *Lode Runner*, a multi-level ladder and platform game; *Hard Hat Mack*, a construction game; and *Quarantine*, a two-player hidden test simulation.

David's Musical Magic is a puzzle adventure for 1 to 4 players, and *Sophomore* is an well-received sophomore opus. *Brain on the Brain* has a brainiac cast and *Brain of Impossibility* is a 12-hour quest adventure. All the above games cost £9.95 on tape and £12.95 on disk.

Additionally, *Operation Whiplash*, *Master of the Multiverse*, *Arabs* and *M.U.L.E.* and luxury packages including enhanced versions selling for £11.95 on tape and £14.95 on disk.

For more details contact American, Suite 100/6, Aspinwall House, Palace Street, London NW1 3HJ or 01-580 1187.

Tony's travels

TONY CROFTON, writer for *Computer Games*, *PCW*, *Figures* and *Monty Nick*, is on the move again.

Tony and partner Roger Taylor of Wizard Development Co have moved to Queensland after a disagreement with Gemini Computer. The first Queensland game will be *Brain Thunder*, a version of Gemini's famous *Speaker* (itself a version of *Speaker's Lure*). The scenario is the original version, which involved speaking along a telephone directory system involving words by telephone, telephones and dials, but has been replaced with a megaphone and the result is the game has been rewritten. The original telephone speech effects are still included, but *Brain Thunder* is also compatible with Gemini's *Speaker 32* voice synthesizer.



TONY CROFTON with Roger Taylor and *Brain Thunder*.

Brain Thunder will cost £7.95 on tape and £12.95 on disk. The next program is the word's easiest *Graphics*, and it is due for launch after Christmas. Tony's deal with Gemini covers these two games only, since his disagree-

ment with Gemini centred on their desire to sign an exclusive contract. As a development company, in its own right, Wizard will be able, in the words of Roger Taylor, to "Free our time and capital to concentrate on new ideas."

Panda
bears up

DESPITE LAST year's temporary shortage of Commodore disk recorders having flushed, there will remain in the market for some time alternate conventional recorders to be used with the 64.

The Panda 20/40 controller costs £17.95 and is produced by PACT International. The interface also works with the VME and features a special phase switch which enables it to cope with different types of tape recorder and tape quality. It also features two LEDs, a red one to show when data is being saved and a green one for loading.

The Fanta 2000 has been
linked with my by leading
program, and will be available
through electronic, tele-
vision, by TV, video and
computer shops. Contact:
FANT International, P.O. Box
22, Pittsburgh, PA 15213.
214-241-1111.

Computer brains

FIFTEEN-YEAR-OLD Paul
Clegg of Cambridge has
become the Junior Texas
Tennis Computer Player of
the Year.

The computer, operated by the Supply Team Commander, provided development a new idea for a computer application which would benefit society. This year, the theme of computer communication was being emphasized, and Part 4's suggestion was "Canteen", a system for sailors and seafarers.

Peter's prizes included a certificate from the Sunday Times, and an £80-00, readers' BBC-501 colour printer and television package, total value £3000, from Compton's. The prizes were awarded by the President of the British Computer Society, Dr Ewen Page, at a lunch at the Windsor Hotel in London.

Several growers applied an ED-34 phosphite and sulfate, total value £1750, and for the third grower there were Calcium lignin, gypsum and sulfate worth £100.

Scope widens for ISP



IMP MARKETING, producer of the game design language Scope, have been bought out by their American distributor Endevor.

Codemaster's expertise at program management software, and the company claims to have been leader in the field for four years. Graham Lomas and Alastair Pendle of IBM Marketing become Marketing and Technical Directors of Codemaster UK, which will be producing floppy-disk based software. Initial releases include *File Writer*, *Report Writer* and *Report Writer*, which enable users or business users to tailor application packages to their own specific needs.

Adventure Writer is a new
easy adventure game engine
based on The Quill from
Gameloft. It's graphical and
feature rich, so you can

admission meeting perhaps, which Bishop, as we understand, will bring up who often allows points of theological subtlety questions as for us and

ELP. (Easy Language Processing) is a visual problem solver, and the original CodeWriter program generates programs in the English language.

The Codemaster factory in Berkhamsted will be producing software in several European languages, and the company will be interested to see the user-specific possibilities involved using their packages and consider them for commercial marketing.

Print will be "in line with UK usage", and there's a sheet also available from the company for 0944 6000 33, Buntingford, Hertfordshire, MK48 1JG.

L9 disks

ALL SIX OF the popular Level Nine software games have now been made available as download.

The Commodore 64 games include Return To Edens, the latest release from the game developers Superball, Combat Commander and the Merlin Earthdawn.

The shift registers will feed 21142, and another register system can exchange them for data with a change of the con-

**CBM \$25m
payout**

MORE DETAILS of Commodore International's purchase of Amiga have been announced. A recent quarterly statement reveals that around \$10m is cash and stock has been paid to acquire the company, which will gain Commodore 128 engineers and the rights to the much-hyped Licensee reward scheme.

Financial analysts have reported unanimously that financial details on the Lawrence, re-titled in a previous issue of *Commerce Business*, are promising, but will face stiff competition. From the Massachusetts and 1984 CPC, Competitive stage prices fall after the announcement of the purchase details, though stock prices tend to rise at this level.

The forces against Amaga by the direction of Asaro, such Tribunal, former head of Commandos, is still pressing Tribunal's charges that Amaga's strategy developed by Amaga for Asaro in being transferred to Commandos under new arrangements. Commandos' spokesman say that the former won't determine the outcome of the hearing.

New menu

COMMODORE UK has appointed a new Marketing Manager, David Clegg. A familiar face with electronics giant Philips, Clegg was recruited with the company's Business Computer programme. He was also employed at UK marketing manager for Texas Instruments' calculators and micro-



His responsibilities will include marking of long distances, surveying and spot heights, but will also extend from Commissioner's office to such the U.S.



REWRITE THE HIGH SCORE TABLES

So, you've got a Commodore. You've also got enemies. With the Gunshot, you'll have all the opposition covering in corners. 8-directional action and an all-in-one moulded stem allows accurate annihilation and strength to survive those all-night sessions. Dual fire buttons for fading fingers (and a rapid fire version when they're really coming thick and fast). And, if you break it (and we know you'll try) our 12-month guarantee will prove invaluable. Only £39.95. The Gunshot plugs directly into the CBM 64 and Vic 20.

Ask about Vulcan interfaces for the C16 and Plus 4.

See the range of Vulcan joysticks and interfaces at your local stockist... we'll see you on the high score tables.



VULCAN
ELECTRONICS LTD
Joystick Genius

SOFT★HITS

White wizard

The latest in the range of action games from Tynan is Gondalf the Wizard - a full-screen adventure in magical battles. In common with the whole Tynan range, Gondalf features very skilled graphical programming, combined with the distinctive soundtrack of

softcore sounds. It's a very fast package through the ages.



softcore sounds.

You control the awesome Gondalf, moving him around

the battlements of his magic castle. It's a very fast package through the ages.

Should the battlements prove untenable, the castle and fading your opposition, you must

follow them outside and cap the finish while collecting gold coins. Gold coins bring you extra points, which can be used to buy more time.

Overall, very dark, though not a great challenge. Program: Gondalf; Ad. Supplier: Tynan; Price: £19.95.

Gondalf: *****; Gameplay: *****

Radio-active

One of three games on Cyber's disc, it's necessary to manage a day worked to be sure of completing it. Containing no Metroidian features, it's very impressive given its 3D effects which will draw a gasp at first sight.

The scenario is a 2000-year nuclear plant designed with disaster as the core focus in

view. You control a number of robots which must be led to the core and used to deactivate it.

Each character can be viewed from a number of different angles, and will contain equipment which can be either useful or dangerous. Your workers can only carry a certain amount of equipment, so choose carefully — it would be disastrous to get stuck through the core only to find that you hadn't picked up the necessary Giga Drill or

Subber along the way.

The interface is quite good, though the figures are small.



Potentially appealing is a second of stage called A.R.P. which draws you everything, though there are also other

options lurking around which have yet to be explored.

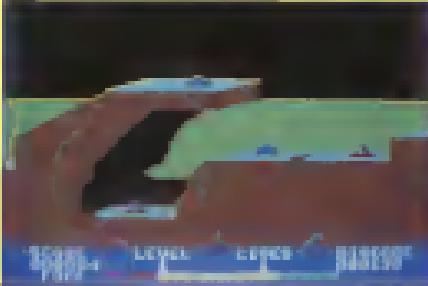
A very nice challenge for the sort of game player who enjoys making maps, and who doesn't mind a challenge. It's been noted that for the kind of user it will take to complete this complex game.

Program: Construction in Metropolis; Ad. Supplier: Creative Sparks; Price: £19.95. Construction: *****; Gameplay: *****; Sound: *****; Graphics: *****

Future tense

Yet another from the masters of the chomp game, and this one's a little easier. It's like a cross between the game itself, which is based on a little known vector editor made available online.

Using the mouse controls and buttons on your keyboard, you must free yourself out of an area, passed over and visiting UFOs land on one of four planets. The issue then changes to the landscape of



that planet where you land, pick up two pads with your similar beam, avoiding its sister, three gas emplacements and

the effects of gravity which allows to pull you over the ground.

At the risk of sounding

banal in the most unavoidable comparison, who are doing something similar in the £10 price range, it's a reasonably playable, much more than mere 30,000-line responses, and although the idea isn't exactly新颖, as anyone can I don't recommend anyone having a go at it in a Commodore version before PCD moves to Masterbase. In conclusion, another fine classic, which you should all dash out and buy it now.

Program: HT; Ad. Supplier: Masterbase; Price: £19.95. Construction: *****; Gameplay: *****; Sound: *****; Graphics: *****

Inkworm attack

Quint is a pleasant if somewhat offering from the informed SuperSoft. It's a very straightforward sort of speed and spatial reflexes, in which the field of play is not your individualised



You play Arthur Evans, a level incrementing progressive

right-hander to the ends of his arms. Your sheet of paper may be defended in all corners from the ravages of the inkworms. This you can do by convening up to ten ladybugs with TETRIS connecting fees. Watch out though, for the paper-eating maggots, and don't overeat. Doing this to the temptation of the time will transmogrify, at the cost of

the paper can lead to a win from the daunted Evans.

Otherwise clear graphics and not equally sound effects as you stamp on the inkworms under Quin's a definite plus. Program: Quin; Ad. Supplier: SuperSoft; Price: £19.95.

Inkworm: *****; Sound: *****; Graphics: *****

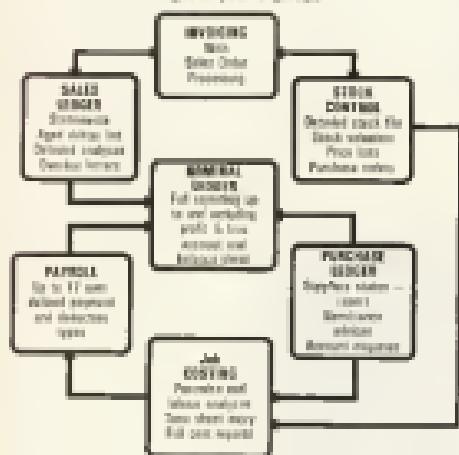
SOFT★HITS

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CHROMASONIC

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Tel: 01-823 3326

SOFT★HITS

That's all folks!

Based on the same sort of concept as the old Road Runner cartoon, Cliff Hanger is a good one which doesn't quite come off. The back ground art is done in a cartoon-like style, though the animation of the characters

isn't up to the same standard.



using the standard methods of the cartoon world, displaying

machines in order to find the missing space-welder module, so which we expected the human element moving from the

rock in his hand, blinding him with a contact, squishing him with an arm, and so on. You must figure out how to use the objects found in the first ten scenes. Whether you make the total reservation if you want to review a scene, and on the final level every game in which you fail to use the bonus coins goes up.

At times the computer takes over the action and presents you with a option, some of

strange shapes, in the shape of worms, angry bats, and indestructible metal objects, are rarely damaged and removed

which are very heavy. The problem is that playing Cliff Hanger is like having an inferior job — the last time. The newly used items off, and without a little variation the graphics aren't enough to sustain the rated Program Cliff Hanger, MS Supplied New Generation Price £19.95

Graphics 4.5/5 Sound 4/5

Gameplay 4/5

8,192 blows

We always expect great things from Taito here in Hyperion HQ, and of CAD/CAM Wizards they've something to offer. It certainly makes up for it in scope.

Introducing an amazing 800 screens of levels, 'yes I counted them all myself' CAD/CAM Wizards is, in the popular,暮暮 the bubbles and solving the problem before going on to the next screen' mould.

The control is a stick interface which is plugged into a controller. A CAD/CAM computer model design and computer aided manufacturing



including a cutting programme.

The normal 2D screen doesn't impress, of course, and there you see a floor battle. The

action is fast, though the screen all tend to look pretty much the same, though a sort of metallic sophistication

performed by machine tools through which your dead drops in speech that underline.

On some systems it's enough to eliminate all the machine elements, and you are then allowed to select a direction option or move on. In all becomes more complicated as you reach the base of the machine, but you are the ground tiles.

Overall, paradise for multi-screen show-offs up front, and purgatory for those of us who don't have access this which can be an issue for long sessions.

Program CAD/CAM

Wizards, 44

Supplier Taito

Price £19.95 cassette £12.95 disk

Graphics 4.5/5 Sound 4/5

Gameplay 4/5

Manic monarch

Two power needs have come together in one package from English Software. The first is the need for speed on the mousepad exemplified in Red Team Software's offering Dr. Faust (reviewed last month). The second is the general boulder-and-platform game. Indeed

all by Manic Monarch and the keep it going though it's a well put in place.

However, if you're going to do a LAP you should at least do a good one, and Henry is Henry's a super Lord Henry, a malignant prince, who has to investigate the invasion of his palace. Each scene contains hazards which must be avoided, and problems which must be collected in order to progress to the next level.

There are eight screens each driven with exciting animation

so dense and a continuous style. The balance of the hide pieces and the hazards



such as climbing rock, striking Happy Faces, and skipping children in every pod-

ulum attack are OK, and there's a nice little sequence where Henry runs from one room to another.

Overall it's quite enjoyable, and has the sort of 'just one more game' feel quality which makes platform games so popular. It certainly wouldn't be accused of being original. Program Manic Monarch, MS Supplied English Software Price £12.95 Graphics 4.5/5 Sound 4/5 Gameplay 4/5

Octoplus

Program Octoplus is as possible as the grand theory with the accompanied. The Party Henry is a blower action from Software Projects. Using an interface as a controller it doesn't look like an unique game like a space ship, but that's not the point.

There's a bit of a story, as you may... or, trapped in a

under the sea to play up drops of punishment from



the eye of the world's angry three up the bottom of the

there to above the Henry below for a raised. There are no cutters which include additional hazards such as running bats, lots of food and the like. Party Henry Henry are you will see the last stage. The space ship technique is very unusual and the movement is very smooth in a curve around the center. The sound effects are unique and although I didn't get on for me missing the

uniqueness Party Henry I managed to above quite a few cutters without losing interest. Before I was finally down in a turn. A really good last game, which has quite put me off the idea of writing a sequel. Overall I'd recommend it to everyone.

Program Party Henry, MS Supplied Software Projects

Price £12.95

Graphics 4.5/5 Sound 4/5

Gameplay 4/5

SOFT★HITS

Zap mania

Some of you will remember Jeff Minter's Hell Gate, a stone'-up-of rock staggering violence that it should have come with a government health warning just to prove that Americans don't have the courage or software to handle such stuff. Software Super Service have released the revenge of the

Quake, or at least a more easily digestible, if probably scarier.

From the second you hit the first button this one is off limits. Across the top of the screen comes spider-like stuff, protected from your lasers by bands of ammonia. Unless you annihilate your step quickly enough, it'll blow the envelope, they'll drag on the ground and infect humans. You have a few moments to save the humans once they're on their way up, but the spider-sites have a nasty tendency to

blow you up pieces with a monkey sideways shot.



The scrolling message — which is difficult to catch while you blast the masses — states that this isn't a License

and grants, obtainable or not, and in Damocles I can only assure wholeheartedly. If nothing else the version you have has a few pleasurable moments blinding hell out of the pants, this is the one for you.

Program: Revenge of the

Quake, Ver. 1.0
Supplier: Software Super Service

Price: £19.99

Computer: Amiga 3000 or 4000
Processor: 16 MHz
Memory: 1 MB
Graphics: VGA or EGA

Flying start

This isn't the most convincing, realistic or demanding flight simulator for the 34, the bosses in those categories must go to MicroProse's Flight Simulator 2: Fighter Pilot, may, though, qualify as the most exciting flight simulator, instead of just zooming around the sky looking for a landing site, you get the chance to kill something

The graphics aren't as good as the Spectrum original, but the sound is all course much better. You have a window view from



an F-111 fighter, and you can select a number of mission options.

In the full version of the game, you must take off, use your map mode and radar to locate enemy planes, plot a course to intercept them, shoot them down, return to base and land safely.

The controls are well-chosen, though it helps to have a joystick, and the shooting sequence is as realistic it's surprising. I plummeted into the terrain about forty times before I got the hang of it — pilot as low level, switch your assigned ordnance to frontal striking, and remember

to put your wheels down.

Excellent graphics which incorporate a good deal of metal and, surprisingly, accurate terrain info on the F-111, help to make Fighter Pilot a real killer. I can't wait to get my hands on the chopper version Thunderhawk.

Program: Fighter Pilot, Amiga Version Digital Integration
Price: £9.99 cassette, £14.99 disk

Computer: Amiga 3000 or 4000
Processor: 16 MHz
Memory: 1 MB
Graphics: VGA or EGA

half as good as, say, Falcon Patrol II, the sound effects are impressive, and there's no real excuse made to create an illusion of 3-D.

In its favour, there's a nice Defence-style navigational radar screen, and a high level of destruction and destruction. It will certainly please many Amiga players, but *Fighter Pilot* doesn't manage to attain much interest compared to many of the other 3D flight offerings.

Program: Famicom Apocalypse, £4
Supplier: US Gold
Price: £19.99 cassette, £24.99 disk

Computer: Amiga 3000 or 4000
Processor: 16 MHz
Memory: 1 MB
Graphics: VGA or EGA

Apocalypse now

YET another hot revenge title from the States, Famicom Apocalypse's best feature is that it doesn't run off the challenges it presents, making each game different.

You play a psychopath armed with an underground laboratory, avoiding mines and traps, dropping bombs and threatening civilians, negotiating laser traps and searching for your 10 last survivors.

The story seems a familiar science fiction, as it doesn't have as much impact as it would have when the game was first released. As a

result it's a bit difficult to figure out why this one was so



success in the UK. There's a bit of money involved when you have to find a refu-

elling point through the labyrinth in the heat, which has



to be destroyed, but overall the game is a little weak.

The sparse graphics won't

Jungle bungles

This is a five-screen shooter I much disliked in which jagged Java sets out to rescue lost from the cannibals. Some are very bad, pursued by a hungry bear, leaping and clutching at monkeys which

will otherwise snare extremely clever too. The final fall, has him leaping from side to side past the bear, on the lookout for breakouts, always has to miss the incoming bears. Some there is all running and crawling, some for a race, or a certain dodging boulders, and lastly there's the cannibalistic cannibals to



conquer with Java ploughs into the pit of hunting vines if you don't conquer all the

monsters in there.

Unforgettable, but this one isn't going to rattle your brain too much. Nine screens of tedium of Bataclan on the soundtrack.

Program: Jungle Queen, Amiga Version John Software
Price: £19.99

Computer: Amiga 3000 or 4000
Processor: 16 MHz
Memory: 1 MB
Graphics: VGA or EGA

PSYCHEDELIA

PSYCHEDELIA -

YOU CANNOT WIN
YOU CANNOT LOSE
ONLY ENJOY

PSYCHEDELIA -

THERE IS NO FRUSTRATION
THERE IS NO KILLING
ONLY PLEASURE!

PSYCHEDELIA -

SWITCH ON TO MUSIC
SWITCH ON IN THE DARK
ONLY SWITCH ON!

PSYCHEDELIA -

Jeff  *Minter*

Hamsoft

ORIGINAL SOFTWARE DESIGN

49 MOUNT PLEASANT, TADLEY, BASINGSTOKE, HANTS.

SHORTLY AVAILABLE FOR ATARI, SPECTRUM, AMSTRAD

AVAILABLE FOR CBM 64, C 16, VIC 20

Opening up the world of networks

Hardware and software programmed by Arjen Blaauw

MAIN-FRAME business computers have long had the ability to communicate with each other, passing information backwards and forwards as well. Until recently this has not been possible where the home market was concerned. However, it is now possible for the family home units to communicate with each other, and with talk by, and even be answered by, other guest homes.

This opens a very big door for the large computer, for one thing is a wealth of information and facilities waiting for you. The list of things you can do is endless, and would take up several magazines if the use of the pen and paper were allowed. Among the agencies that treat you are Pepsod, Merck, Abbott, Eli Lilly, Parke-Davis, and the latest illustrations by Commercial, Commerce.

Computer What can you do on all those systems? Well, have you ever wanted you could get information on just about anything, or book a theater ticket, or see what's new in software for your computer and if you liked what you saw, download it? All this has been possible for the asking. Before you can do all of these things you must have some way of connecting your computer to the outside world. To do this, you will need a MODEM to connect your computer to British Telecom's telephone network.

A word of explanation of the various systems available so you would not get lost at the start. The main board rate is 1200 bps. This means you receive at 1200 bps per second and respond at 33. This is the system that Festec and Microcom use, and most bulletin boards. Probably the next most used board rate is 300/100 bps duplex, as this is used by most bulletin boards and has to user communications parity there is 1200/1200 bps duplex — the receive rate stays constant at 1200 bps but can only operate in one direction at the time. 1200/1200 bps board duplex is used mainly for user to user communications.

10 of 10

Now for the various systems available it is up to Health Authorities and Local Health Boards to decide what kind of information you could request as well as showing you how to contact your local authority or unit trust or through the home share provider directory. In the Present network are voluntary organisations such as Macmillan, BHF, Age UK and others, mostly at the voluntary level and provide such things as respite care, befriending as well as many other voluntary bodies which are run by volunteers who are prepared to give up their time to help people.

run these excellent services, mostly free of charge to the user. There are so many bulletins knock up and down the country it would be impossible to cover them all, but what can be said is that they all provide a very friendly information service on a variety of subjects.

Choosing the right monitor is not as easy task, as it may not work on your computer, or it may not have the facilities to get out the services you require. I will concentrate on monitors for the Compaq Presario 64, but the following information is for all computers.

- What is the cost of my computer?
- There are several aspects to consider before buying your system and they are:
 - (1) Is it compatible with my computer?
 - (2) Can I get an interface and software to make full use of it?
 - (3) What do I want to use the modem for and will it carry out that task?
 - (4) If I want to download software are there facilities to do so?
 - (5) Can I send messages or programs to other home computer users?

The first question we will look at is the relationship between the Child and Content Pack. This is the one supplied by Microsoft and the only one I've tested. It includes the downloaded files and the Telnet command to start it up. On the CD there are just two related and three URLs. One example is to connect the content pack to the Internet.

line function whilst the other controls the base and modes. The LEDs are the power on/off, carrier signal and line error! The CRM-40-Quadra Pack comes in a snap lock case so that the unit slides into the cartridge port. Connections are very simple. A telephone jack supplies power and a RJ-11 wall socket, whilst your telephone provides the back of the module. The main connection is from the module to the cartridge. Finally plug the module into the main board.

The Cosmic Puzzler takes one of the 152 images and the operating software lets you crop up parts of it presented with a menu and by selecting one of the options you are taken into the crop menu. The instructions look like a bit sparse, but with the way they follow each other they are not really necessary.

The whole operation from first power-up until there's screen, and whatever option you choose you are guided to the next step so easily.

The Project Gutenberg EBook

Another model from the OEM line includes the Teletronix P-300. It is a single board rate multiplier with 1000/1000, 1000/1500 full duplex and 1000/1200 burst half duplex. An added feature is a memory unit; that is, 16K is left over in the base model; it will store the picture for up to 30 sec. A monitor can be left on one component, or, with the right software, one could run two video formats simultaneously. The Teletronix P-300 works with the CDRM 94 Gamma Pack but requires an external program to interface.



This is a course teaching you how to write instructions for any computer which understands BASIC.

This is a beginners' course, and it'll be followed by courses of gradually greater complexity.

To start off with, though, follow this week's Starter Course! Further classes will continue the course next weekend.

ENTER A TO WIN

The connection to the Telmodem II has two options, one for auto or manual answer and one for coaxial line. There is also a button to switch between the different baud rates and an expressive red LED. Functions set to the Telmodem II but with the added feature of 300/1200 baud full duplex, so you will be able to use the bulletin boards and information services that use slow rates. You can, of course, transfer files over to over on the same baud rate, slower but easier than 300/1200 full duplex.

The Telmodem TM 110 modem is quite large as modems go but nevertheless quite good. There are no controls or memory stored as everything is software controlled. The only indication that the modem is on are the two LEDs on the front right hand corner.

The interface and software come on a small PCB with all components exposed and plug into the cartridge port. The interface board, in my opinion, should have been put right after plugging it in and not at the cartridge port in my case and it could be damaged. The TM 110 has expandable and is capable of storing eight telephone numbers plus your ID and password. Entering the telephone numbers is quite simple, and is done in the edit mode mode from within the program. Once entered the modem stores the numbers in its memory with the aid of built-in features. Once you have entered the track in off plugging in the user face board and connected up the relevant cables you may then power up the computer.

Options

On power up you are presented with a menu giving various options. Before you can proceed you must set up the output devices — disk drives, printer etc. All expansions are static drives and are fairly simple to follow.

On test, the Telmodem TM 110 worked well enough when it came to downloading software. Downloadable programs have to be implemented when using the TM 110 with the Commodore 64 cartridge pack. To get your program to run you first have to download a transfer program from Prestel, then you have to type in and save a short program from the manual or from a listing on Prestel. This is where you may have some problems, for the program in the manual and the program being given on Prestel differ and the manual is not at all clear on how to use the transfer program. With trial and error I did manage to implement a program and release it.

The TM 110 is a 1200/75 baud modem but with an overlay program available to make use of full duplex on 300/1200 baud. Again, a nice screen (Prestel, Microline 400, Bulletin Boards) or any other system operating on 1200/75 baud or with the overlay program 300/1200 baud service.

My big worry with this package is the interface board. I would have been much happier if it had been in a case. Otherwise as far as I proved very easy to use and update. From the look of the modem it is very neat.

The Miracle Technology WSI 2000 modem is truly a multi standard modem with every type of baud rate and protocol you



are ever likely to need on the UK or abroad. All controls are very clearly marked on the front of the modem and are controlled by three knobs. There is also a lot of add-on accessories available such as auto dial and answering machine boards. To use the modem with the C64 you will have to decide what software you are going to use with it, as only a listing is supplied with the modem and the only option 300/1200 baud operation. The only option I am aware of does not allow full use of the many options available on the WSI 2000. What software you use determines what software you will need and as far as what add-on accessories you can use. One option that works very well is the COMM 64 Cartridge Pack with the Telmodem II cable and the 300/1200 baud overlay program from GM 110 described earlier. This will allow the modem to be used on 300/1200, 300/1200, 300/1200 baud rates, but will not support the auto-dial and auto-answer boards.

Another alternative is disk based software from PSI. If no PSI software you will require the RS 232 serial interface supplied by Miracle Technology, as the software uses the user port to communicate with the modem. As supplied the disk based software will support 300/1200, 1200/1200, 300/600, and 1200/75 baud

operations. One of the unique features of this program is that it allows you to store a list of telephone numbers on the program disk. When the program has loaded the page of names stored are presented on the screen, just pressing the letter key on the screen you require will automatically dial up the number if the auto dial board is fitted. If not, you just dial the number displayed yourself.

Dialling

There is also a ring control facility that allows you to choose several numbers you want to try and will ring each one in turn until it gets an answer. This is most useful when dialling up Bulletin Boards as they always seemed to be engaged. The next alternative I discovered by accident, but it might prove to be the cheapest way of using the WSI 2000. The software and interface board is supplied as an extra for the French WSI 2000 (just two euros) will work just as well on the WSI 2000, although you will have to change the plug from the 1 pin DIN supplied to a 25 pin 12 connector. However for the price it is well worth it.

The WSI 2000 worked well on all of the options I tried, and can be used on any system. The single PSI disk supply usually

Product	Supplier	Price
Transcom 2	GTE Ltd, North Point, Cheadley Industrial Estate, Priors, Cheadley, GLOUCESTERSHIRE GL1 5BN	£18.95
CPCM 44 Colour pack	GTE Ltd	£34.95
Transcom 1	GTE Ltd	£17.95
TM 100	Transite Marketing, Albert Road North, Middlesbrough, Middlesbrough, TS1 2TL	£111.95
CPCM based	Transite Marketing	£49.95
MPC/100 based colorbox printer	Transite Marketing	£29.95
WS200	Microtek Technology Ltd, 10/12 Stoney's Grove, Ipswich, IP5 1AF	£129.95 + VAT
RS232C w/T	Microtek Technology	£19.95 + VAT
Printek 1200	Printek Computing Ltd, 18, Young Street, Brookfield Industrial Estate, Longridge, West Lancashire, PR2 9RA	£19.95
LPF + software	Printek Computing	£19.95
Compound modems	Chamberside, 11 Hanover's Road, Worthing South Industrial Estate, Worthing, West Sussex	£99.95 inc. P+P Computer membership

Software

Microtek Technology has come up with an excellent system, but has unfortunately neglected the software side. At best it is a standard 8086 program. If you decide you need more than the basic ones that are found on most traditional modems that is the last for you. However, if you just want Printek then this would be an expensive way of getting it.

The Printek 1200 is quite different from the systems we have looked at so far, but one nice aspect is that it does not require one of BT's new plugs to work. The modem is completely self contained and only needs four AA type batteries to power it. The instruction and software pack comes as an optional extra, and together with the modem, is by far the cheapest package I have seen for the Commodore 64. The modem does require you to have a telephone that has round jack and accepts power as a connection for telephone.

The software is exactly based and does handle 9600 bps and supports calling, calling, send and load frames, change ID and use of user options and has 1200/75, 300/1200 baud. However the software does not allow downloading of software. The gain to user seems to be unique as it allows machine code programs to be loaded into the computer as a different location to which it was saved and also allows the memory computer to refer to where saved. This option would be quite useful when two different computers are being used. However in my opinion both computers would have to be using the same software, because necessarily the same address.

The modems itself is quite straightforward and is packed of accurate readings in operation. All that is required of the user is to make sure the telephone number is pressed firmly into the keys of the modem and switch on the basic rate required, the rest is handled by the software (except dialling the telephone). On test, the program and the modem worked well. It

was used a portable modem, then the model appears to be the one to suit your requirements. It can be used the Printek, Microtek 800, printek 1200 or 1200/75 baud, plus 1200/1200 baud half duplex user to user.

The Printek 1200 must be one of the cheapest ways of getting 'just' Printek or other 1200/75 service. Despite the price the whole idea is more than adequate for



you if you are not interested in download, program. You will also be equipped for 1200/1200 half duplex user to user.

The last model we are going to look at is completely different in many respects to all the others we have looked at. Compuer doesn't own the Transcom 24 or the Communications Modem. Where the Communications Modem differs from all the other modems is that it allows you to get into Compuer's own system designed especially for the C64, called Compuer. Buying the modem on its own however is not going to get you very far. When you connect to it, it will be connected by an application from to your Compuer, which you will have to fit in and used half duplex with an input tandem reading entry. You will then be able to use ID and pass word to allow you to use all Compuer's facilities.

To access Compuer from Compuer you will have to download a service program. This also applies to user to user communica-

tions. At this time I received the modem the program was free but I understand that this will be charged for in a later date.

Back to the good points. As I said earlier there is a lot of good quality free software plus lots of commercial programs at discount prices. The thing here, as it is known, is for Compuer users to use as they want. Programs can be uploaded and sold although Compuer take a share of the price you charge. There is a method of you can send messages to other Compuer users. The list of uses and features is quite long. I must of the point warn you that if you want to use Compuer during the day it is very important leave pounds for hourly so you will have to buy it from the bank when they are on holiday?

The modem cannot be used for Printek and user to user communications without additional software which again you cannot obtain without paying Compuer.

Conclusion

It may be very difficult to make your mind up what modem to buy, as none of the ones I looked at would allow you to access all the options open to you. Some of the modems were capable of operating in many different baud rates, but did you have the software to drive them? No other modems except Compuer's own would be capable of accessing Compuer. Although most of the software for the modems was written by 128 Computing, it did not seem possible to use different types of software on user to user communication, which means if you want reading messages or programs to any particular person you would both have to pay the same software.

I was perhaps more impressed with the Microtek modems, considering the high level of software support from PSL. We'll be looking in future articles at some of the services you can access with a modem, and this may help to make the choice of product easier. ■

Lazy rides

Former U.S. Rep. David Dreier has announced a new term for his office.

THIS MONTH'S Star Guest for the 14 is from David Wheeler of Terminal Software.

Terminal started up four years ago as Terminal Master, a cassette, label and disc system business. It was founded by Andy Hiltz to explore the computer software field, and the company soon developed through the mail-order field and direct selling in retail outlets.

Early Terminal zones such as Super Delight and Super Grübler made way for more ambitious and advanced programs like Super Commando and Phoenix Cross.

David Whittaker's programming career developed when he was interested in electronic music. He now has four synthesizers, and also plays guitar. During a break between shows with various bands in NH he recorded an album on the Vox 20, and soon produced songs such as "I'm Not Your Hampshire". David, now 27, is working at 4200 and 280 machine-cycles, and is looking forward to using 48 and 32 bit computers. Considering themselves market for eastern New Hampshire, Massachusetts and Peabody, his music might seem rather like his concert audience.



Jones again

www.sagepub.com/journals/links.htm

Lucy Jones is an airline flight attendant who would rather play video games than do any work. Terminal's game players can go past Lucy Jones around the edges of her head, trying out each video game and avoiding the damage and the deadly claws she carries.

David has written a new version for Lucy now which you can type in and play around.

The listing is in two parts, one to print the character code data and one for the game itself. Since there's a lot of data to type in, David's offering a copy of the program on cassette to anyone wanting a complete or partial index for C1 99 or later at 16 Cedar Place, Lower Broughton, Saltburn, M62 5PR.

To play the game use a joystick in port B. You must control your missile proportionately, much more left, just right, just up and down, and fire when the spinning surfaces aligned between them. Each time you hit the surface it changes colour and you score points. You are playing against a computer which does not have a joystick.

10

3155 DATA 145, 142, 281, 136, 176, 247, 24, 185, 54, 141, 45, 3, 141, 8
 3156 DATA 280, 32, 151, 124, 145, 140, 281, 76, 176, 247, 24, 185, 58, 141
 3157 DATA 46, 3, 141, 1, 280, 147, 1, 141, 47, 3, 145, 141, 45, 3, 141, 41, 1
 3158 DATA 248, 5, 147, 225, 141, 47, 3, 145, 1, 141, 45, 3, 32, 151
 3159 DATA 234, 140, 141, 41, 1, 248, 5, 147, 225, 141, 45, 3, 147, 5
 3160 DATA 141, 76, 3, 149, 18, 141, 73, 3, 149, 5, 141, 47, 3, 141
 3161 DATA 76, 3, 173, 5, 228, 74, 176, 5, 142, 225, 143, 47, 3, 74
 3162 DATA 176, 5, 143, 1, 142, 47, 3, 74, 176, 5, 142, 225, 143, 76
 3163 DATA 3, 74, 176, 5, 142, 1, 142, 76, 3, 173, 47, 3, 281, 1
 3164 DATA 280, 13, 173, 45, 3, 281, 141, 248, 4, 228, 42, 3, 32, 8
 3165 DATA 32, 173, 47, 3, 281, 228, 141, 173, 43, 3, 281, 74, 248
 3166 DATA 8, 280, 42, 3, 32, 38, 142, 173, 76, 3, 281, 228, 288, 13
 3167 DATA 172, 42, 3, 281, 48, 248, 4, 288, 42, 3, 32, 42, 32, 173
 3168 DATA 76, 3, 281, 1, 280, 13, 173, 43, 3, 281, 148, 248, 4, 238
 3169 DATA 43, 3, 32, 39, 22, 173, 43, 3, 141, 3, 280, 173, 52, 3
 3170 DATA 141, 4, 280, 173, 52, 228, 41, 18, 280, 18, 173, 76, 3, 280
 3171 DATA 18, 140, 1, 141, 76, 3, 32, 317, 54, 24, 144, 5, 147, 8
 3172 DATA 141, 76, 3, 173, 74, 3, 248, 5, 76, 228, 34, 288, 72, 3
 3173 DATA 280, 47, 149, 5, 141, 72, 3, 174, 41, 3, 232, 234, 5, 288
 3174 DATA 3, 147, 11, 141, 47, 3, 280, 228, 18, 280, 8, 142, 5, 173, 48
 3175 DATA 3, 141, 37, 280, 142, 41, 3, 174, 44, 3, 232, 228, 192, 288
 3176 DATA 2, 142, 287, 142, 44, 3, 142, 248, 7, 232, 141, 228, 140, 142
 3177 DATA 281, 6, 173, 7, 149, 5, 281, 227, 47, 3, 141, 47, 3, 32
 3178 DATA 141, 228, 145, 142, 281, 5, 176, 7, 147, 5, 34, 237, 48, 3
 3179 DATA 141, 44, 3, 173, 43, 3, 24, 147, 47, 3, 281, 49, 248, 7
 3180 DATA 281, 142, 248, 3, 141, 45, 3, 173, 44, 3, 34, 147, 48, 3
 3181 DATA 281, 75, 248, 7, 281, 133, 248, 3, 141, 44, 3, 173, 45, 3
 3182 DATA 141, 5, 280, 173, 44, 3, 141, 1, 280, 32, 94, 37, 288, 73
 3183 DATA 3, 280, 5, 149, 18, 141, 73, 3, 32, 142, 57, 173, 76, 3
 3184 DATA 280, 18, 173, 77, 3, 280, 1, 94, 76, 141, 32, 147, 5, 141
 3185 DATA 32, 280, 174, 5, 280, 142, 76, 234, 43, 3, 248, 4, 232, 134
 3186 DATA 16, 247, 48, 41, 174, 1, 280, 148, 28, 234, 42, 3, 248, 4
 3187 DATA 232, 134, 14, 247, 48, 41, 32, 111, 57, 149, 1, 141, 76, 3
 3188 DATA 147, 5, 141, 33, 280, 147, 18, 141, 5, 212, 148, 148, 173, 5
 3189 DATA 280, 280, 1, 280, 248, 3, 280, 5, 280, 173, 2, 280, 280, 2
 3190 DATA 280, 248, 3, 280, 3, 280, 148, 1, 212, 147, 173, 141, 4, 232
 3191 DATA 147, 173, 141, 4, 212, 142, 5, 287, 280, 234, 146, 280, 213, 248
 3192 DATA 3, 147, 5, 141, 5, 212, 147, 4, 141, 1, 212, 147, 32, 141
 3193 DATA 4, 212, 147, 33, 141, 4, 212, 32, 94, 57, 147, 5, 141, 33
 3194 DATA 280, 76, 149, 5, 133, 280, 147, 5, 133, 231, 198, 231, 280, 280
 3195 DATA 176, 280, 280, 244, 46, 248, 173, 74, 3, 34, 149, 1, 141, 76
 3196 DATA 3, 173, 75, 3, 149, 5, 141, 76, 3, 214, 41, 15, 34, 145
 3197 DATA 49, 141, 137, 5, 173, 74, 3, 148, 76, 74, 76, 141, 4, 232
 3198 DATA 49, 141, 138, 5, 142, 41, 15, 24, 140, 48, 141, 137, 5, 76
 3199 DATA 248, 173, 76, 3, 34, 232, 1, 141, 76, 3, 173, 77, 3, 232
 3200 DATA 141, 77, 3, 232, 41, 15, 24, 140, 48, 141, 146, 5, 173
 3201 DATA 76, 3, 148, 76, 34, 74, 76, 24, 140, 48, 141, 147, 5, 172
 3202 DATA 41, 15, 34, 180, 48, 141, 158, 5, 76
 3203 END SET YOU BE GIRD'

Program 2

```

 8 REM ***** POKER *****

 1 POKER2,44+POKE$4,44+CLK1 POKE1HCHR$00+POKE$31272,27
 2 POKE$3288,8+POKE$3281,8+POKE$3284,8
 3 POKE$42288
 4 HU+HU+POKE$3274,7+POKE$3277,8+POKE$3271,8+POKE$3275,8+POKE$3284,8
 5 POKE$3274,12+POKE$342731HCHR$00+POKE1,8+NEXT
 6 GOSUB10000
 7 FORN=53248TO53243:POKE1,NEXT
 18 POKE$3280,18+POKE$3284,2
 28 GOSUB10000
 22 POKE$32347,33+POKE$32843,177+POKE$32844,282
 23 POKE$32320,280+POKE$32327,238
 24 POKE$32328,76+POKE$32329,118
 25 POKE$32327,13+POKE$32328,138+POKE$323276,127

```

```

246 POKE=2541043885TIP=2
27 POKE24073,200-W=POKE23004,(W=POKE23004,W=NEXT)
49 POKE53288,3-POKE53289,1
98 SC=18-POKE842,8-B=POKE843,B=RRR SCORE
93 POKE844,123-POKE845,1/NEXT TIME
188 BYS14852
118 EC>1P0K844,114751-400+198+(UPD011A79)=400+B=POKE114870-48
115 POKE53289,B
120 PRINTCHR$(147)HPC12181"YOUR SCORE WAS"SC
122 THE HI SCORE IS"HI
124 1P0K842-8C8H8P1NTPC11240"YOU HAVE THE NEW HI SCORE OF"EC>HI=SC
125 POKE7-BTQ1999NEXT
128 PRINTPFC1147"PRESSA SPACE TO REPLAY"
148 RETURN
150 DOTS0
588 POKE=133887034851.
582 PRINTCHR$(SPCEC031)
584 NEXT
516 RETURN
1988 PRINTCHR$(147)HPC12801"WELCOME TO THE WORLD OF"
1998 PRINTPFC11240"PLAY ZONE85"
1998 PRINTPFC11780"BY DAVID MATTAKER"
1998 PRINTPFC12801"JOY8710X PORT 2"
1998 POKE54277,128POKE54294,128POKE54295,12
1992 POKE54277,4;POKE54295,4;POKE54297,4;POKE54297,8;POKE54298,12
1994 POKE54278,32;POKE54293,32;POKE54299,32
1994 POKE54276,33;POKE54292,33;POKE54299,33
1998 POKE7-BTQ1999NEXT
1998 RETURN
2008 POKE=3275870338641:READY:POKE,,B=NEXT+B=5327768:RETURN
2000 DATA1479,192,123,256,173,253,149,79,153,253,169,44,133,253,169,8,177,256
2002 DATA1479,282,238,258,258,253,260,244,238,253,169,253,281,253,280,253,234
2003 DATA1479

```

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If you have ever wanted to program your 64 to sort data, alphabetically or numerically, but haven't been sure how to go about it, I hope this article will be of some help. The program, SORT DEMO, is a menu driven demonstration of three different sorting routines which will sort the data you have entered, giving you the end of the sort the same time the routine took to execute. This time should be used as a guide only, and not as a law, because it does not take into account the time taken for the program to find the numbers, and as the numbers are put on top of the other they may be significant.

SORT DEMO is not a very useful application in itself, so what's meant to be done using SORT DEMO is to start the routine, and a couple of other things like using the PRACTITIONER key, instead of just pressing the escape key, instead of just pressing the escape key.

Any program which sorts data must first be given the data. How you go about this depends on your program, you can use DATA statements in the program itself, user input via INPUT, or read the data off a disk or tape file. Whether method you opt for, you should know two things. Firstly you should know some idea how many pieces of data you are going to collect, so that you can DIM-allocate the arrays which will hold your data. The second thing is to record your data as it is entered, so that at the end of the input you know exactly how much data is in the array. The last reason that there are two pieces of DATA, for example. Once you have created the number of elements used, it is a good idea to keep the information safe. I would suggest that you save the values in the first 10 lines of memory, and then read them back in.

PROGRAMMING

Make sense of sorting methods

N. Gregory deals with 64 data sorting problems.

By doing this you will always know where the information is, and it can be stored on tape or disk as part of the array. All you need to do when reading the array back is say lines such as:

```
40 INPUT #1, NUMBER
50 NUMBER = VAL(INPUT)
60 DIM ARRAYS(100)
70 FOR INDEX = 1 TO NUMBER
80 INPUT #2, ARRAYS(INDEX)
90 NEXT INDEX
```

Using this technique you can use the data in other programs without having to worry about how much data is in the file.

To those who know you can use arrays, try a simple SORT example. One thing you must do is add a few more DATA statements otherwise the program will not work properly. To do this all you have to do is type in the lines as follows, followed by line one and three. Once you have entered line one and pressed RETURN go back over the last number and change it to 4, then a 3 and so on. Remember to press RETURN after each line. I suggest you enter at least 20

numbers because you will then get a good idea of the speed of each routine. When you have done this change the variable line 100, NMAX, to equal the number of data statements you have, not counting line 1. You can now continue typing in the program, when you've finished type in the variable line 100.

When run, SORT DEMO first asks you to input words to be sorted. These should be a maximum of 14 characters long, and the last character with the value of DATA character 1. The limit on word length is not imposed by the sorting routine subroutine, but by the DATA statements at the beginning of the program. Because each line has 10 commas in (you typed them in, as I hope they have), this leaves enough room for 14 characters total and two inverted commas (""). The only reason for this was that I didn't want you to type the word len in every time you used the program.

After you have finished entering the words, you can select a sorting routine from the menu. Again this is only to stop you

```
1 DATA "A B C D E F G H I J K L M N O P Q R S T U V W X Y Z"
2 DATA "----- BUBBLE SORT -----"
3 DATA "----- SHELL SORT -----"
4 REM READ MORE DATA STATEMENTS FROM HERE COME RS LINE 2 & 30
100
110 NMAX=20 REM SET MAX TO NUMBER OF DATA STATEMENTS
115 FOREVER=10 FOREVER=15
120 PRINT#1,NMAX,140-REM LOAD CRSC CHARACTERS
125 TCH$=CHR$(144),HOLDCHAR$=CHR$(145) REM RESERVE MEMORY
130 GOSUB 520 REM BUILD CURSOR POSITION ARRAYS
135 REM FLDCS REM DATA FILE
140 IF VAL(FUDGETC)=3 THEN GOSUB 600
145 PRINT#1,REM CLR
150 GOSUB 700 REM READ DATA STATEMENTS
155 GOSUB 740 REM READ TEXT
160 GOSUB 740-PRINT#1,CHR$(144)+CHR$(145)*NMAX
165 IF RECORDNUMBER THEN END
170 ON REC:RECORDNUMBER=1320 GOSUB 700,105,279,440
175 GOTO 160
180 REM ----- BUBBLE SORT -----
185 TYPE$="BUBBLE"
190 PRINT#1,PRINT#1,NMAX,140-REM "SORTING"
195 TIC$="00000000" REM SET INTERNAL CLOCK
200 INDEX=1 FLDS=0
205 IF SORTING=NMAX-1 THEN 230
210 TEMP=INDEX: INDEX=INDEX+1: TEMP=INDEX
215 SORTING=SORTING-1:FLDS=FLDS+1
220 SORTING=SORTING-1:INDEX=INDEX+1
225 FLDS=FLDS+1
230 INDEX=INDEX+1
```

Continued on page 23

You start my rapid! I shoot

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AUTHOR - JAMES DAY ORIGINAL MUSIC - BRAIN DOE

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Shoot the Rapids

AUTHOR - PAUL BUNN

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the
Rapids
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64/128

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```

235 IF INDEXCOUNT THEN 265
240 IF FLAG=1 THEN 260
245 TIME1=60 REM GET TIME OF SORT
250 DISPLAY 500 REM SHOW SORTED ARRAY
255 DISPLAY 740 REM MENU TEXT
260 RETURN
265 REM ----- SHELL SORTING SORT -----+
270 T1#="TIME#1#HLL#SET#"
275 P0#=0 HT#=0 VT#=0 DO$UBS15 PRINT "#INDEX OF #ELEMENTS", INPUT(PN)
280 P#=$#>#HLL>#HT# THEN P0#+=#1 TO COUNT INDEX1#+=#1 NEXT
285 P#=$#>#HLL#C50 AND P#=$#&#1#-#3#7 THEN 260
290 PRINT PRENTTAB(120)* " F - I / "
295 T1#="600000" REM SET INTERNAL CLOCK
300 RINGE=COUNT
305 RHNGE=PNT(PN)+#2) IF RHNGE=0 THEN 305
310 INDEX=1
315 FLRS=COUNT-RHNGE
320 LELEMTH=INDEX
325 ULELEMTH=LELEMTH+RHNGE
330 IF P0#=1 THEN DISPLAY 410 ON PPN GOTO 370
335 IF $#R#T#(INDEX#)<#$#R#T#(ULELEMTH) THEN 370
340 TEMP#=$#R#T#(INDEX#)
345 $#R#T#(ELEMENT#)>#$#R#T#(ULELEMTH)
350 $#R#T#(ELEMENT#)=TEMP#3
355 ELEMENT=ULELEMTH-RHNGE
360 IF ELEMENT#1 THEN 305
370 INDEX#+=#1
375 IF INDEX > FLRS THEN 310
380 GOTO 305
385 TIME1=60 REM GET TIME OF SORT
390 DISPLAY 500 REM SHOW SORTED ARRAY
395 DISPLAY 740 REM MENU TEXT
400 RETURN
405 REM ----- POINTER ONLY -----
410 IF $#R#T#(INDEX#)<#$#R#T#(INDEX#(ELEMENT#)) THEN PPN+=#1 GOTO 430
415 TEMP#=$#R#T#(ELEMENT#)
420 INDEX#(ELEMENT#)=INDEX#(ELEMENT#)
425 INDEX#(ELEMENT#)=TEMP# PPN+=#2
430 RETURN
435 REM ----- SHUFFLE SORT -----
440 TYPE#="SHUFFLE"
445 FRONT P#=$#R#T#(INDEX#)+#1#-#1#-#1#
450 T1#="600000" REM SET INTERNAL CLOCK
455 FOR INDEX#=#1 TO COUNT HOLD#(INDEX#)=CHR#(1#) HOLD#(INDEX#-1#)=CHR#(1#) NEXT
460 HOLD#(1#)=#P#T#(1#) P#=$#P#T#(1#) H#1#=#P#T#(1#)
465 FOR INDEX#=#2 TO COUNT
470 IF $#R#T#(INDEX#)-#1#<#$#R#T#(INDEX#-1#) THEN P#=$#P#T#(1#)
475 H#1#=#P#T#(1#)
480 HOLD#(INDEX#)=#P#T#(1#)
485 NEXT INDEX
490 IF $#R#T#(INDEX#)=#1# GOTO 500
495 $#R#T#(INDEX#)=#CHR#(1#) H#2#=#1# H#1#=#1#
500 FOR INDEX # = 1 TO COUNT
505 TEMP#=$#R#T#(INDEX#)+#1#
510 IF P#=$#P#T#(1#) H#1#=#1# THEN H#2#=#1# GOTO 540
515 IF P#=$#P#T#(1#) H#2#=#1# THEN H#1#=#1# GOTO 540
520 IF HOLD#(INDEX#-1#)=#TEMP# THEN H#2#=#1#
525 IF HOLD#(INDEX#-1#)=#TEMP# THEN H#1#=#1#
530 IF H#2#=#1# THEN H#2#=#2#
535 IF H#1#=#1# THEN H#1#=#2# OF HOLD#(INDEX#)=#HOLD#(INDEX#-1#) THEN H#2#=#1#
540 IF H#1#=#1# THEN $#R#T#(INDEX#)=#HOLD#(INDEX#-1#) H#2#=#1#+#1#
545 IF H#2#=#1# THEN $#R#T#(INDEX#)=#HOLD#(INDEX#-1#) H#1#=#1#+#1#
550 H#2#=#NEXT INDEX
555 GOTO 495
560 TIME1=60 REM GET TIME OF SORT
565 DISPLAY 500 REM SHOW SORTED ARRAY
570 DISPLAY 740 REM MENU TEXT
575 RETURN
580 REM ----- DISPLAY ARRAY -----

```


saying. One word of warning though; the Commodore only checks to see if it has one or the DATA's at least printed, not the record you've just entered. When the program tells you to **PRESS RECORD AND PLAY ON TAPE** you should press just that — get the tape ready before you enter the END of DATA character.

After SAVING the named program, SORT DEMO will present you with the menu, from which you can do one of five things. There are three sort routines, namely SORT, SHELL, METZNER; READ and SHUFFLE SORT. The facility to **READ** the data into the reading array, and END. You should **READ** the data after each sort otherwise you will find the **SHELL** SORT sorting data in less than a second, something that does not happen in the real world!

On the three routines I have chosen the **SHELL** sort is the slowest and simplest. I have included it because it is the best routine for calculating the machine code if any of you are interested.

The other three routines are a little involved but you shouldn't have too much problem working out their logic. The **SHELL**, **METZNER** sort, I have decided are two methods of achieving another method you may need to sort arrays. Let me compare your needs to sort data in an Address Book type of program. In a program such as this, the chances are that all the data will be linked, that is the entries will go with the addresses. Obviously if you just use the Name file, the Address file may lose all connection so as the real you're left with an unrelated mess of data.

Pointers

You can get round this problem by not sorting the array contents themselves, but just a set of pointers to the array contents. In this way the contents of the array do not change, order etc., for example NAME(3,3) was S.MITH, and ADDRESS(3,3) was FABERFISH. So, then even after sorting, the contents of NAME(3,3) and ADDRESS(3,3) would be the same as they were originally. The modifications in the **SHELL**, **METZNER** sort show that it leaves the contents of the sorting array alone and sorts pointers which it holds in the array **INDEX**. To illustrate this, run the **SHELL**, **METZNER** sort and answer "Y" when asked if you want to sort **NAME** or **Address** (actually answer "C"). Let the sort run and the list prints the sorted array contents on the screen. Note that the list is not sorted but it is in the order that it was **READ** from the DATA statements. Now run the program, (THIS ISN'T TESTED), and type:

```
FOR M=1 TO COUNT PRINT
  SORT(ADDRESS(M), INDEX)
```

You will now see a sorted list being printed. If you want to play the lot, clear the screen with the **CTRL** key.

The method brings me on to an aspect of computing which is outside the scope of this article, that of Clustering. Clustering is one of those things which is going to happen to you sooner or later — rather like a cold. You will get problems of your memory in lots of STRING data stored, garbage is after all

just another way of saying used storage. Unfortunately there are few programs better at leaving storage and creating garbage, than sorting programs. You may have noticed already, this problem yet probably because the Commodore's memory is so meagre, but if your program has sorted up fast and appears faster than that's probably garbage collection going on.

One of the best ways to avoid the time delay in garbage collection is not to use **STING** movements at all which, if you remember is what the modifications to the **SHELL**, **METZNER** does. It shifts variables, which are initially different things altogether.

If you do find you are having Clipping problems with a program you are writing, try one of these remedies (you won't get these problems with SORT DEMO necessarily):

1. Try to use **VAL** instead of **STING**, as demonstrated.
2. If half of the strings you don't need deal fully in garbage collection with the command **CLIP(STRING, P, L)**
3. Save all your data and then do a CLR. This may be a bit drastic but sometimes garbage can take 30 minutes so it may be worth it.

The two stage SORT DEMO doesn't illustrate any.

b) How to limit the sort to a specified number of characters — the sort KIFT?

c) How to use memory more.

Most of these problems are easily solved. The first can be solved by using the string skipping commands of BASIC and replacing any comparative statements, for instance:

```
IF SORT(ADDRESS(1)) < - SORTS
```

```
(INDEX=1) THEN END
```

by commands such as

```
IF LEFT(SORT(THISFILE, KIFT)) < -
```

```
LEFT(SORT(THISFILE)-1, KIFT) THEN
```

where KIFT is the number of characters you want to consider in the sort.

Sorting

Sorting numbers can be done by putting the **VAL** function into the **STING** expression test, as I have mentioned, strings can cause garbage collection problems. If you know how long a list is going to be numbers then it's your best course to handle numbers by the name of the routine for **Sorts** but as far as possible at **String** arrays, not using arrays.

Finally, because I wanted to do the SORT DEMO program so that you can use the routine as is in your own programs here is a list of the variables and, briefly, what they do. ■

List of variables

HOLD	Holds the data to be sorted.	INDEX	This array holds the sorted positions where you SORT as position.
TYPE	This is the type of sort routine being used, the variables used to name the sort when the array is displayed.	JAPPER	This is the range over which 2 elements in the array are compared — it is a fixed width throughout.
TH	This is the Commodore BASIC command and variable it is a read/write of the pifly stack.	FLAG	This variable marks the end of the NAME .
TEMP	Used wide random to hold temporary data.	IMPLEMENT & IMPLEMENT	These are the next elements in the array which are being compared.
COUNT	The number of elements in the array NAME .	SHUFFLE	This array holds two sets of data. The first is determined by the array depending on how it compares with the previous piece of data put in to HOLD .
TC	The reading off the pifly stack divided by 60. This gives the HOLD results in seconds and tenth of a second.	TC	This variable is used to calculate between the 2 elements of NAME , the expression:
NAME	The number of DATA statements before the number (maximum) pieces of data to be into HOLD .	$T = (T + 1) \text{ AND } 1$	$T = (T + 1) \text{ AND } 1$
HOLD & VT	Cursor positioning variables which are linked to the arrays NAME & VT , which contains cursor movement characters.	TC	causes T to go between 0 and 1 each time the expression is evaluated.
SORT	The variable equals one if any arrays are moved. Only when HOLD all the strings are in order will SORT stop sort during a pass through the array.	TC	The 2 elements of NAME controls the expression resulting of cursor movement characters of HOLD .
FLAG	The variable equals one if you about to sort by position rather than contents.	NAME	This is used to tell the position for the result of the comparison between HOLD and NAME . In short direct from the next character of HOLD is set to filled.
INDEX	This is a count variable here. It is 0 up to the address of the array being considered.	NAME	These 2 variables keep track of which address in HOLD the program has to consider.
SHELL , METZNER , SORT	This variable equals one if you about to sort by position rather than contents.	NAME	
POP		NAME	
PPM	This indicates the reverse after a pointer is sorted.	NAME	

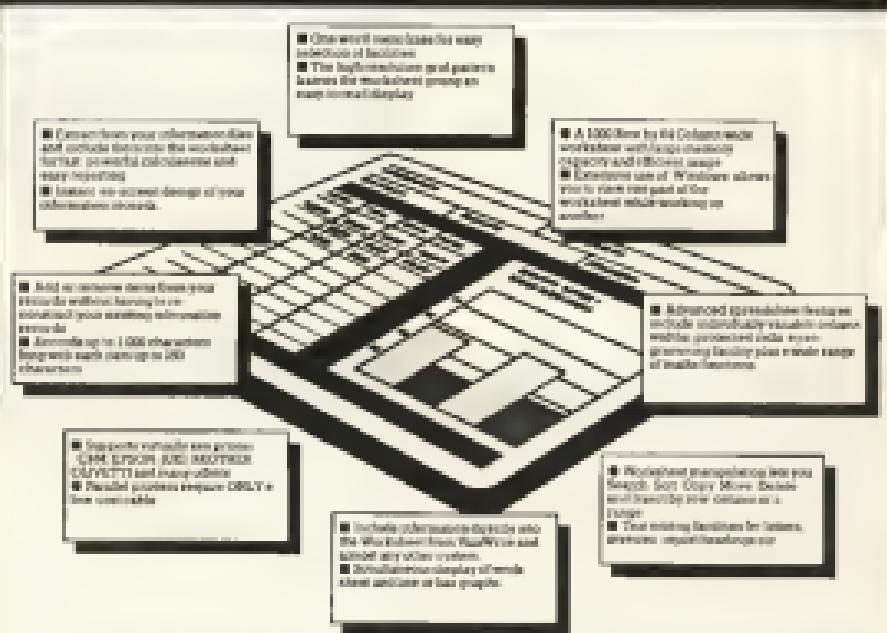
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TOWER OF ADVENTURE

Is this a dagger I see before me...?

*Wicked Witch of the West Barbara Conway is inspired by *Eureka!*, cast up about *Macbeth* and alienated by *Alien*.*

ADVENTURE makers are always dredging new and varied experiences, but even the most imaginative of us could hardly complain on this score when it comes to the remarkable Eureka! package offered by Domark. Not less than 10 games, three sequels and five extras, crowd onto one tape and no one's challenge alone isn't enough; there's a \$19,980 price covering the five adventures to solve the lot.

This is a massive opus, ranging from predilection for modern times with the now being an inch down the Time-magic powers of the Temporal Teleman, an alien artifact-wielder which the user will disassemble and take the march with it. Each game has ended up in a different time period and, if you don't solve each puzzle correctly you might be stuck in that era. Since all of these are fraught with insidious pitfalls, that is NOT a good idea. But to complicate matters, the final version is being held for review by the villainous Dr Hugo Von Berg who wants to be Emperor of the Earth - Well, don't we all?

Imaginative

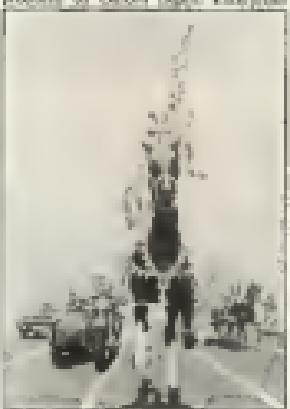
The introductory scenes, which set your entry level in the adventure to come, are strikingly special and, as I fully concede, play, I could have done without them. But the quest themselves are a much more interactive prospect.

Each is illustrated with swift, well drawn graphics without varying size and with some rooms animated, such as the attack of an aggressive eagle. The locations include Roman, Persian, Roman, Gothic, a Gothic basement and a camp and the Caribbean ports, each of which will eventually yield a castle for the final adventure. There are some sound effects, good but not spectacular, but the puzzles are ingeniously constructed and the solutions often rely on a sense of history. You won't figure out how to free Merlin from his rock prison in the Colosseum chapter without me.

My acidic independence ensure that I don't have much regard for Eights as the

\$29,980 is probably only item on. I suspect that dedicated adventurists who have the same problem give a bright 10 year-old to do the arcade games and then make use of the remaining strength together with their wits to solve the rest.

One another multi-faced game, this time a four-part Star Macbeth was produced by Oxford Digital Enterprises



with the heading of the publication of that magazine. I had expected that reverie to be a monument to my feeble independence. Alas for good intentions! Unfortunately, it turns out to be a sensible pack of six adventures, complex, witty, with surprising puzzles and sound effects and some remarkable documentation further. "Shakespeare, a computer game screenwriter who should be ful-

Dreadnoughts

The games follow the plot of the play closely and the "help" feature gives colloquies to the edited version of the play enclosed with the two tapes, which give useful clues about how to proceed and/or digest it further, although that for I have

been able to achieve only minor variations in viewing Macbeth's come-uppance.

The games vary from text and graphics, which will change according to whether a creature has been opened or a required object deposited (don't jump when you hear the very realistic sound effects from what you put on the hardness — yuck!) through mainly graphics to end-user text only for the final confrontation in Duncan's death.

None of the cast the player is Macbeth, so other adventurists you will be lady Macbeth the tricky domestic chores of tidying up a last-minute banquet, persuading Hubby to strengthen your royal guard and finding something a bit more exotic than the old pack of suit to add to a bidding situation.

After each game you can visit Raymond Scott's top instrument and a psychiatrist, for a laugh which is both entertaining and informative. The fact that this started life as an educational package is obvious, but the final result is as mouthful, and search, adventure game won't dare capable of taking its own against the commercial competition.

Recent agent

Another four-pair is The Professor Chronicles, which is actually two separate adventures, one of them being the previously tested, and successful, Professor's Play. I didn't see the original game box, having heard very well of it, I had high hopes of this package from Shards Soft-

ware. They were not quite realized, although a lot of that did could have already gone into the programming and layout of those games. The first is Operation Saffron which continues a secret agent plot with a hunting quest. In Part One, which requires you often to sit an interactive screen, certain areas of that screen are extraordinarily clear, so much so that I copied it line allover in the pencil. The second, hunting, part is suitable for some pleasant animated graphics with the text subtitles in the lower half of the screen. ▀

MACBETH



• The "Diary" adventure is most fun, with a varied and often wacky scenario, but again reaction can be VERY slow, and I was disappointed with the scope of the violence they throughout.

Biggest disappointment of the month is probably "Afor", which looks very tempting from the documentation but turns out to be a highly annoying after Grapnel invade clock chase from the doomed ship of the SF film of the same name, and despite promises of great options version from individual personality programs for the crew members, of whom you are the commander, playing a role shows. After about quarters of an hour, I couldn't get it off, whether the crew decided to obey my orders or not and was cheering on the ship as it descended them.

Maxwell

Just a few words left for "Front Page", a strategy game based on being a newspaper proprietor in a very frightening time. Seems to do an OK job of realistic, apart from over-emphasizing the number of books needed to cover stories, with nice weekly graphics representation of how your papers are doing in readership, income and the likelihood of a government crackdown. You're asked to pick a name & pocket "Maxwell", choose why you'd be pleased to say that my situation, newspaper, government, reading reg is now ruling the place with the more creative consequences. Now there's nothing for you ■

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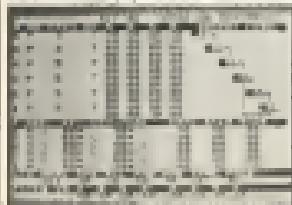
Simple synthesiser software scrutinised

Chris Whitcombe plays through JMS/Ranetti's MIDI music software series

ALTHOUGH MARTIN MULDING music using the Commodore 64's SID chip can be rewarding in itself, the true potential of computerised music is better realised using it to control a dedicated music synthesiser.

Until recently the only systems able to do this were fairly expensive sequences manufactured by the synthesiser companies, and because each company used different data transmission methods, it wasn't possible to interface machines from different companies.

The manufacturers recently realised that this situation wasn't in their favour, and came together to develop a standard which would allow musical instruments from different companies to be linked together. This also opens up the possibility of programme control through home computers, of which the most popular is the 64.



Using a MIDI connection between the synthesiser and the 64 enables a new world of musical control through software to be opened up.

The MIDI system has become the new industry standard for interfacing synthesisers, not only with computers, but also with other synthesizers and drum machines. It is now possible, using MIDI, to control large numbers of keyboards and drum machines at the touch of a couple of buttons.

Synthesizer

The system I was shown is by JMS distributed by Ranetti and was demonstrated using the Commodore 64 with 1544 Disk Drive. The synthesiser used included a Roland J1080, an OSCar, two Yamaha DX7s (plus衰) and a Yamaha DX23 Drums machine. The JMS interface plugs into the port of the 64 and has connections for three synths. Should you be lucky enough to own more than this, don't worry. So long as your keyboard has a TRS11 master socket, they can be interconnected in much the same way as disk drives.

Each instrument is assigned a MIDI channel so that it knows what information to extract and what to pass through to the next connection.

If you should happen to be the proud owner of a J1087 or 1088 for that matter you will know that it can be a bit fiddly to programme sounds into it, so each parameter has to be adjusted individually using the built-in LCD display. With the JMS SOUND EDITOR program, things are made much simpler, as all the sound parameters are displayed on the screen at the same time. Having created the sound that you want, you can then save it on disk for later retrieval.

Patches

If you don't want to bother making up your own sounds, then you can buy the SOUND LIBRARY disk which contains 100 pre-programmed "patches" for the 1087?

If the Record lights on a tape machine make you nervous, resulting in wrong notes everywhere, then the MULTITRACK COMPOSER program is for you. Instead of recording straight to tape, you play "into the computer", which stores all the notes data on memory. The data can then be displayed and altered via the computer keyboard. You can edit pitch, gate times, velocity and velocity, and you can change the tempo without causing a change in the pitch. This means that you can "blend" just as you would by playing somebody else and then getting the program to replay it at

the correct speed.

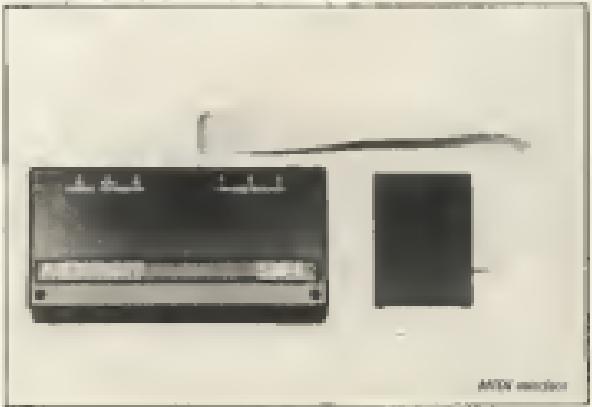
If you have more than one keyboard and you spend a lot of time reworking existing and deleting them perhaps the J1 TRACK RECORDING STUDIO program would help in much the way of the Real Time recording of 12 polyphonic tracks with simultaneous monitoring of all the recorded tracks, no fewer than 12 different



tracks and 1 track just being signal, there is an lots of sound under when mixing over and over again editing process and amount of sound parameters also record and loading and storage of samples from on disk. Again, you have complete change without variation of pitch.

Repetitions

An ARPEGGIATOR program is available which, when used with a keyboard, enables the player to store and programme up to 16 chords. Arpeggios can be set to run up, down or code and sequences can be saved on disk.



If you are something of a Yankie or Black Madonna, then you will, perhaps, have noticed that our piano sequence has half ten pairs of hands and half a dozen heads! Not so much to give your series of key-boards, but more to cover them between numbers. Imagine the scene... you are on stage in front of an audience of millions. You finish playing one song, but before the next one you have to change the sounds on all the keyboards. Now not only do you not have much time, but you also have to remember where you put the song off paper with all the programmed Presets we want. You are the **MASTER KEYBOARD** program. This little gem will give you full control of a series of connected keyboards. You simply set up all the sounds in the privacy of your own home or studio, and set them into a designated area in the Master Keyboard. When no stage, all the sound parameters can be sent to all the keyboards in the touch of a button or two. **Quick passes!**

I was impressed by all the programs (there all worked fine) and, considering their

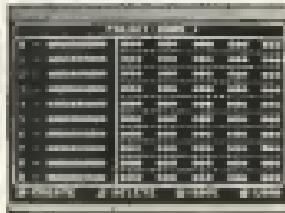


unpublished nature, they are very inexpensive, costing from about £150 upwards. The interface itself will fit most popular DSK boards, again, at a cost of a few pounds.

I was impressed by all the programs (they all worked fine) and, considering their

inherent low cost, I would like to see more publications and programs will become available which will, no doubt, help to drive prices down. The future of computerised musical instruments looks very rosy indeed!

I would like to thank George at Electronics of Cheltenham for the demonstration, and Roderic for showing their work. If you want to discuss more along these lines, then contact your local synthesizer



Standard

Now that MIDI has been accepted as the standard, I feel sure that more and more manufacturers and programmers will become available which will, no doubt, help to drive prices down. The future of computerised musical instruments looks very rosy indeed!

I would like to thank George at Electronics of Cheltenham for the demonstration, and Roderic for showing their work. If you want to discuss more along these lines, then contact your local synthesizer

and I am sure that more and more publications and programs will become available which will, no doubt, help to drive prices down. The future of computerised musical instruments looks very rosy indeed!

SERIOUS 64 SOFTWARE

Programmer Reference Guide (Commodore 64)	£5.00
Dr Watson Basic Computer Manual (64)	£5.00
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Adventures on the magic network

Richard Bechtel interview: Computer's Multi-Year Forecast, 101

WITH THIS increasing popularity of adventure and strategy games as opposed to arcade videogames, one of the most interesting new ideas in the computer world is MUDS — the Multi-User Domains.

This is a new kind of adventure game where instead of playing alone, you can meet up real time with a number of other players. All prior actions influence others, and vice versa, so that if you were to, say, walk into a room and find a sword lying on the ground and two other people in the room, the chances are that one of them will pick up the sword before you do — and very likely snarl you with it.

Systems like MUD obviously require bigger computing power than any home user can manage. In fact the original MUD was programmed on a DEC-10 mainframe computer at Essex University.

100

The makes it possible for you to play against other Computer subscribers. Using hundreds of rules away from you, all through the phone network.

As we've done in previous articles, Commander's Column will review some of this year's submissions to the system for just under 1000. Close your external drives, SAVI can be found at GOTO1337.COM and HLLY.MUD.LINK. Yes, a new banner for play MUDs - changes include 21 per month for membership of the closed user group, \$1 per hour while playing plus phone charges. It's not cheap.

However, since you're no pro, run play in the greatest adventure you've yet seen. I'd be more than enthusiastic in my praise of MUD if I hadn't experienced the game, so Ed leaves out no stone in the case.

The basic fact is that MUDs are just ordinary share fun to play than ordinary adventures. The maximum number of people able to play on the Penn University system was 12, and you used to have to pay per month to get a game since the BBS was in use during the day. Computer MUD can be played at any time of day or night, and with up to 14 simultaneous players.

With all those players, MUD gets pretty hectic. Although the MUD is a text-only adventure, the multi-dimensions keep the game interesting, even when you're

Remember yourself if you are lifted using a second harness.

Another feature of MUD is participation; if you can figure out how to make the swords heat, or how to treatise the mysterious runes, there are many points to be picked up. It's also possible to play as more than one character, though there are around 60 weapons on the Index screen, many of them also play to three characters.

MUD, of course, isn't the only game available on CompuServe; software can be downloaded and run on your own PC. Commodore plans to add around 100 new systems in the next three months, and although the discs may be expensive, business users will probably start showing interest later on, once their service becomes available to satisfy their needs. Given the popularity of MUD, though, business users might by well advised not to let their employees spend too much time on the system.

Century Publications, issuers of MILS, bring you a unique alternative in a game for stand-alone computers — it could provide a useful "tool" for those of you who want to test the game before deciding to buy it.

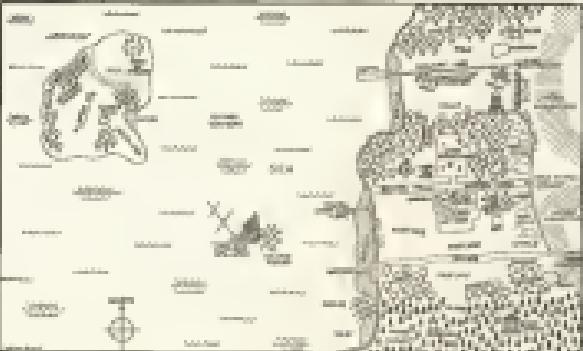
If you want to find out more about how you can play MUD on the BBSs system, contact Richard Banks, Department of Computer Science, Sussex University, Coldehurst, East, GU2 8QZ, visiting a BBS. Contact Computer at Marley House, Clapton Street, London W1P 3SH.



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descriptive passages and powerful action scenes. They have to keep your wits about you all the time — other players can steal your possessions, or set traps for you if you look like an easy target.

The objective of the game is to collect resources and hide them in a storage, thus protecting them from the player. Collecting resources also scores points, and allows you to move up levels. You start as a Novice and finally become a Wizard, endowed with magical powers which enable you to influence the actions of other characters, becoming invisible and enhance the access speed, together with the usage of the power at various places/levels, and





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COMMODORE SOFTWARE FILE

Cosmic Bugs

This goes for the suspended He atoms from 1990-1991 at LIGO.

14 CRYSTAL BUCKS Your task is to defend the Ranch from invading mountain biker gang in the air. The mechanism, out of frame, drops white bags on your building. These are underwater, so you can't see all of them at once. If the yellow bags hit

possibly before the end year.

Use A for left, D for right, and L for fine. There is a short manual response, a toy table and a high score meter. You get 10 bonus items for 1000 points.

Autorun

This "Mr. 20" program comes from John
Conrad of Boston.

When run, AUTOBUS creates a short routine which disables **SUM/TOT** and **RESTORE** and then **LOADS** and **LUNS** the new program on the tape. The method used to achieve the switch is to instruct

The basic work starts like most programs with the address of the program code regions, which then take over after the load is completed from the program before running.

8

*The Consumption of primary energy from
A1 Data of Petrol*

This chart system can be added to any Classroom 3D program in order to deliver a range of basic tests within the program. Users will receive a basic or a complete package and add the routine using the CLASS3D module.

Delving or diving into parts of a program can usually be achieved by looking to the source, M4Wise, and re-entering using RETURN for the larger sections. This implies care and time, though it can produce desired results.

```

680000 REM//ROUTINE TO DELETE LINES FROM SPECIFIED START NO TO FINISH NO
680010 INPUT "START NO";SX
680020 INPUT "FINISH NO";FX
680030 INPUT "INTERVAL";IX
680040 CT=6X
680050 PRINTCHR$(147);CT
680060 PRINT"Fax";/FX;".";IX";CT";CT+IX;".",;PRINT"001068050"
680070 POKE631,19:POKE632,19:POKE633,13:POKE634,13:POKE139,4
680080 IF CT>FX THEN 68100
680090 END
68100 GETIN:IF IN$="" THEN 68100

```

Based on your Committee's programs, consider it easier to send a printed template with a paper if possible. That being said, if you must send it by email here is a template for describing the program and explaining how it is constructed. We pay \$2.00 per month-long letter published. We cannot guarantee for certain money programs we will fund, so please keep a copy. If you want us to return your letter you must include a stamped, addressed envelope. If you have any questions with this template, please write to the committee's editor, Editor@TheCatholicSchoolsLetter.com.

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VIC 20 WORD PROCESSOR — VICTEXT

Persevering great processes. That was another... large but rather like a small town, where almost everyone, except the old folk, seems to be a shopkeeper or a tradesman, and every shopkeeper seems to have had his shop for a long time.

VIC 29 FILE = DATA FILE

These results were very similar across different countries, and we will therefore just focus on the following two.

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It is important that the measurement and comparison can be made with all three models and processes occurring. It has proved difficult and costly to measure both economic parameters simultaneously because these variables are often measured over different time periods.

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Tividale, West Midlands B69 2LE



Sampling Four main directions length all points total points several

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REFERENCES

Wolter, Sponger and Winkler: initial water physiochemical surveys

Journal of Health Politics, Policy and Law, Vol. 35, No. 4, December 2010
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For more information, contact the National Institute of Child Health and Human Development at 301-435-0911 or visit their website at www.nichd.nih.gov.

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Other notable figures include Sir John Lubbock, the first Baronet of Port露比克, and Sir George Stokes, the third Baronet of Ballytemore.

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ANSWER TO QUESTIONS AND EXERCISES

REFERENCES AND NOTES

Le décret n° 2000-1044 du 12 octobre 2000 relatif à l'application des articles 10 et 11 de la loi n° 2000-514 du 19 juillet 2000 relative à l'amélioration de l'environnement et à l'efficacité des PDU (ex-DEEE) est en vigueur.



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DUCKWORTH ADVENTURES

COLLECTOR'S APPROVED

By Peter Duckworth

The original and best computer adventure game available for the Acorn and Commodore 64. Unlike other versions, this one follows the original story, complete with all the interesting traps you would expect, as it presents the Task, the Dragon, the Prison and the mysterious shadow shapes. You can find locations to visit and you can have complete control of the movement system. As a recognition to the Acorn version, you are offered an enhanced version - £19.95.

ISLAND ADVENTURES

by Peter Duckworth

This exciting new computer adventure game for the Commodore 64 is a different kind, in which you are presented with a full range of colour sound, music and graphics. It's a real challenge to complete the various objectives, which are set in various parts of the world, some of which you have never seen or heard before. A memory of words and/or symbols is required.

MOSCOW PALACE ADVENTURES

by John D. Ryan

This exciting adventure for the Commodore 64 is a long awaited addition to the series. You travel through the Soviet Union to complete your quest to rescue the Russian princess. The last part of the quest is to rescue the princess from her captors, as the palace has been under assault. Once she is freed you can have a look around. There is a choice to have three different types of game.

CAPTAIN DRAKONIA

by Ray Baker

Available for the Acorn, BBC BDF and the Commodore 64, the game uses a colour screen, sound and a joystick. You must go to visit the castle and rescue the princess from the evil Drakonia. You will need to use the joystick to move the princess. There are many useful objects to be found using the map and these can be used to help the princess get to her rescuers. There are also many useful items to collect and you can use the joystick to move the princess when you are ready.

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User-friendly programming on the C16 and Plus/4

An extract from Brian Lloyd's *Commodore 16 - Plus/4 companion*

FOR A COMPUTER program to be really used it must be "user friendly", which means that whoever uses the program is given full instructions on how to use the program properly, and then whatever that user does, however stupid, the program should carry on working and tell the user what he or she has done wrong. To help you to write such programs your computer has been supplied with error trapping facilities, so that if, for example, you press the RUN/STOP key when you do not want to, then the program will be able to explain what you have done wrong. Figure 1 is a short program which illustrates this.

Line 140 is routine that this is the end of the error trapping subroutine, and that jumps to line 20 to continue with the program from there.

There is another version of the RESUME statement — RESUME NEXT. This causes the computer to go to the main program and carry on with it from the RESUME statement after the one which caused the error. For instance, change line 140 to:

140 RESUME NEXT
 then type RUN. As some point press the RUN/STOP key. You will receive the same message telling you that you shouldn't have

```
10 TRAP#00
20 SONGLE
30 PRINT"PLEASE DO NOT PRESS THE RUN/STOP KEY"
40 PRINT"WHILE I FILL THE SCREEN WITH O's"
50 FOR N=1 TO 500:NEXTN
60 FOR N=1 TO 1000:PRINT"O";:NEXTN
70 FOR N=1 TO 500:NEXTN
80 RUN
90 SONGLE
100 IF ER=30 THEN PRINT"I ASKED YOU NOT TO PRESS THAT
KEY!" :PAUSE
110 PRINT"NOW, I WILL START AGAIN"
120 PRINT"BUUT PLEASE DO NOT PRESS THE RUN/STOP KEY"
130 FOR N=1 TO 2000:NEXTN
140 RESUME 20
```

Line 140 of the program contains the first of the error trapping commands — TRAP. This command tells the computer which keys to ignore when it comes across an error. In this case the TRAP command tells the computer that if there is an error it should go to line 30 and carry on with the program from there.

The rest of the program is straightforward, until you come to line 80. In this line we refer to a variable, ER, which has not been assigned any value by the computer. This variable is a system variable, which is a variable used by the computer. It's dimensioned the memory of the last error which was made. Since the error number for pressing the RUN/STOP key (because the RUN/STOP key is defined as an error by the computer) is 30, the computer will carry out all the instructions from line 80 onwards only if the RUN/STOP key had been pressed.

Line 80 has another new command on it. The RESUME command allows the computer to continue with the main program after an error has occurred. RESUME is similar to GOTO except that it also marks the end of the error trapping routine, so when the computer comes

pressed that key, and that, after a short pause, the computer will continue with the program from where it was stopped.

There is another system variable which is used for errors. This variable is ER, and contains the last number in which the last error occurred. So if you change line 80 to 80 MIELLO

and RUN the program you will immediately get an error (obviously!) If you now type

PRINT ER,

the computer will display the number 10, which is the line in which the error occurred.

We know that the system variable ER contains the error number of the last error that occurred, but a question doesn't tell you much about what has happened. For instance, if you were told that error number 11 has just occurred you wouldn't be much the wiser. Fortunately, there is a function which helps us in this matter — ER\$(). If you type

PRINT ER\$(11),

the computer will display the message SYNTAX on the screen. This is because error number 11 is a SYNTAX ERROR. Similarly, if you type

PRINT ER\$(14)

you will see the message UNKNOWN QUANTITY displayed on the screen. You can see the ER\$(X) to find the message for any error number except those which refer to the disk drives.

The HELP command is extremely useful but when you are trying to find a mistake in a program line, if, for instance, you have a line with four or five commands in it, and you know that there is a mistake on that line but don't know where, you simply have to type HELP and the line with the mistake in it will appear on the screen. The actual command with the mistake will flash so that you can identify it easily. The HELP command will only work after you have received an error message (because the key marked HELP has the same effect as typing HELP).

It is very rare when a program of any length or complexity works first time. Finding real errors (the ones which the computer sees) is easier and tells you about any problems especially with the HELP command. However, there are also bugs in the program which, although the program works, prevent the program from doing exactly what it is supposed to do.

In order to make the determination of bugs much easier your computer has been given two commands — TROJAN and TRIPPY. The TROJAN command tells the computer to turn the TROJANON. When this happens the computer will display the line number of the line which is currently being carried out on the screen, so as soon as you see the number you can look to see which line is being carried out, and then will be the line you need to fix.

For instance, if you wanted the message on line 20 of program run to read BEANS ON TOAST AND BACON instead of BEANS ON TOAST, we could use the TROJAN command to find the line which displays the message BEANS ON TOAST. (I know you can see it, but in a program with about 200 lines it would be a lot more difficult to spot, and this is an example.) So, type in the program, type TROJAN and then RUN the program.

```
10 SONGLE
20 PRINT"BEANS ON TOAST"
30 FOR N=1 TO 10
40 PRINT"THIS IS A TEST";
50 NEXT N
```

As each line is carried out you will see the line number appear enclosed in square brackets ([]). You will see [20] appear as the message BEANS ON TOAST appears on the screen, so you will immediately

• Lines 100-110 display the message "THE PERSON'S NAME IS" and then wait for a response before continuing the program to the variable NAMES.

It is very often useful to be able to have a list of numbers or characters which the computer can order to and use. These numbers or characters could for a list of names and addresses which you will the computer to search through for a specific name. For example, One way of doing this is to store each person's name and address in a string variable, and possibly a string array, and search through each variable when you want to search for a person's name. Another way, though, would be to keep a list of DATA which the computer could look through for the correct name. To set up such a list we use the DATA statement, like this:

```
1000 DATA "WENDY BROWN", 12345, "JOHN BROWN", 12342
```

Statements

This is just a short list, only two names and telephone numbers, but the list could go on, using several DATA statements. As you can see from the above DATA statement, any characters can be included in the list, and can be positioned in quotation marks, although this is not essential. Numbers can also be stored in the list, and both numbers and characters can be mixed freely, as you can see.

It is not much use having a list if you cannot do anything with it. When we have to do a READ each piece of data has a variable, the numbers being read into a numeric variable, and the other characters being read into a string variable. Variables can also be used as a string variable. Variables can also be used as a numeric variable if you want, but you cannot perform calculations with them if you do this. Program three is a simple telephone directory which asks you for the person's name and then tells you their telephone number.

```
1000 INPUT "WHAT IS THE PERSON'S NAME?";NAMES
20 FOR N = 1 TO 5 READ A$X
30 IF A$ = NAMES THEN PRINT "THAT PERSON'S TELEPHONE
NUMBER IS";X:GOTO 40
40 NEXT N
50 PRINT "SORRY, I DON'T KNOW THAT PERSON'S TELEPHONE
NUMBER"
60 PRINT PRINT "PRESS ANY KEY"
70 GOSUB 10000
80 DATA WENDY, 12345, JOHN, BROWN, 12342, BILL,
SMITH, 12342
90 DATA JACK, BROWN, 12345, PETER, JOHNSON, 12343
```

When you RUN this program the screen will clear and you will be asked for the name of the person whose telephone number you want (obtained one from the names in the DATA statement). The computer will then search through the list of DATA and if it finds that person's name it will tell you his telephone number. This is immediately after the name in the list. If the computer does not find the person's name then it will tell you.

The program works like this:

```
Line 100 Clear the screen. Display the
message "WHAT IS THE PERSON'S
```

NAMES" and then wait for a response before continuing the program to the variable NAMES.

Line 20 Sort, repeating everything between the FOR and NEXT command 5 times, with the value of the variable N starting at 1 and increasing by 1 each time around the loop and in random 2. READ the next piece of DATA. Now the last and largest is to the string variable A\$, then READ the next piece of DATA and assign it to the variable X.

One piece of DATA from the list at the end of the program (in fact it READs two pieces of DATA, but only one at a time) Each time a piece of DATA is read in the computer remembers where the next piece of DATA is, so that the next time it comes across READ it remembers where to take the DATA from.

Several pieces of DATA can be read in with one READ statement, as you can see from the above program. All that you have to do is tell the computer which variables



Line 30. This is one of the string variable A\$ in this case as the string variable NAMES. It is then displayed the message "THAT PERSON'S TELEPHONE NUMBER IS" and then displays the value of the variable X before returning to line 40 and carrying on with the program from

you need the DATA to be assigned to in the correct order, and separate each variable with a comma. You can READ as many pieces of DATA as you like, as long as the variable that will fit it is a valid program line, it is almost you will need to use two lines and two READ statements.

But what happens when the computer reaches the end of the DATA list? Well, since the computer considers the end of the list a line to move DATA to READ#1, it will give you an OUT OF DATA ERROR if you keep on trying to READ as more DATA. For instance, if you change line 70 of the above program to

```
70 GOSUB 10000:GOTO 10
```

and RUN the program for a while you will eventually receive an OUT OF DATA ERROR. This is because the RUN command (which was originally used in line 10) also reads the DATA pointer (the one which the computer uses to remember where it is in a list of DATA) back to the start of the list, whereas a GOTO command does not. To overcome this problem, we use the RESTORE command, which tells the computer to read READ#1 in DATA from the beginning of the list again. If you now change line 70 to

```
70 GOSUB 10000:RESTORE:GOTO 10
```

the program will work perfectly. You may also tell the computer to start reading DATA from a certain line number. For instance, using line 70 to

```
70 GOSUB 10000:RESTORE:90:GOTO 10
```

The RESTORE 90 command tells the computer to set the data pointer to the start

you will only be able to find the addresses of Jack Jones and Peter Johnson.

You may have thought up to now that when the computer makes a LEFTS command it jumps to the line which has the DATA on it and looks through that line for the next part of DATA. That is not the case, however, and to prove that type TRASH and RUN the program. You will see that at one time does computer jump to line 30 or 35 in look through the DATA for this is because the computer knows exactly where the next piece of DATA is stored in its memory, so it does not need to bother about line numbers; it goes straight there.

String variables are extremely useful, and there are many ways in which you can chop them up and rearrange them in just your strings.

If you are familiar with the commands IF THEN, you will understand lines like 100 IF A\$ = "TEST" OR A\$ = "Y" THEN .

It would be much easier if we could test to see if the first letter of A\$ is a T because then we could accept answers such as Y, TEST, TEST!, or virtually any other version of the word YES starting with a T. So do this line as the LEFTS command, like this 100 IF LEFTS(A\$) = "Y" THEN .

The parentheses line tells us to see what the first character of the variable A\$ is. If you do just like this 100 IF

100 IF LEFTS(A\$) = "Y" THEN .

then the computer will tell us to see what the first two characters of the variable A\$ are plus 2 in the LEFTS command tells the computer you want the first 2 characters, changing it to 3 would mean the first 3 characters.)

Variables

Of course, you don't have to use a string variable with the LEFTS command for any of the other string handling commands, come to think of it, you could also use characters enclosed in question marks like this 20 IF LEFTS("COMPUTER") = "C" - "COM!" THEN .

Here is a short example program 10 SGNLRL INPUT "DO YOU LIKE USING COMPUTERS?":CON 20 IF LEFTS(C\$) = "Y" THEN PRINT "YOU GLAD ABOUT THAT?" 30 IF LEFTS(C\$) = "N" THEN PRINT "OH, I'M NOT TO BLAME!"

The RIGHTS command is very similar to LEFTS, except the LEFTS code to see what the first characters of a string are, but the RIGHTS command looks to see what the last characters of a string are. Try this example

10 SGNLRL INPUT "TYPE IN SOME THING PLEASE":CON 20 PRINT "THE FIRST 2 CHARACTERS THAT YOU TYPED IN WHERE?", 30 PRINT LEFTS(Z\$)20 PRINT "THE LAST 2 CHARACTERS THAT YOU TYPED IN WHERE?", 40 PRINT RIGHTS(Z\$)20

The 2 in the RIGHTS command tells the computer that you want the last two characters of the string, and once ready to change, just like the LEFTS command.

The MID\$ command is used to find out



when the middle characters are, rather than the beginning or end ones. Rather than just saying how many characters you want to use, as you did with the LEFTS and RIGHTS commands, you also have to say where you want to start from. For example, if you had a line such as this

30 A\$ = MID\$(B\$,4,3)

then the computer will assign three characters from the middle of the string variable B\$ to the string variable A\$, with the first of those characters being the fourth character of the string variable B\$.

It is also possible to replace parts of a string variable by using the MID\$ command. Here is a short example program which does this,

10 SGNLRL 20 A\$ = "HELLO HELLO EVERYBODY!" 30 PRINT A\$ 40 MID\$(A\$,1,3) = "THEIR" 50 PRINT A\$

If you look at line 40 you will see the MID\$ command being used to replace the word HELLO with THEIR. This is done simply by telling the computer where in the string variable you want to start the seven characters of HELLO and how many characters you want to replace. On this example you want to replace five characters, and then tell the computer which characters you want to replace the old ones with. As you can see the replace characters must be enclosed in question marks.

The INSTR\$ command is used to find out if one string is contained in another string. Try this short program.

10 SGNLRL A\$ = "PETER PIPPER PICKED A PECK OF PEPPED PEPPERS"

20 PRINT INSTR(A\$, "PECK")

When you RUN the program the number 10 will appear on the screen, because the P of the letters PECK is the 10th letter of the string variable A\$. When you have past told the computer to do a research through the string variable A\$ to see

if the letters PECK are contained within it. If these letters are contained in A\$ then the computer will tell you exactly where the first letter of PECK appears in the string A\$.

If you look at the string A\$ you will see that the letters PECK appear twice, once in the word PEPPED and once in the word PEPPERS. The computer will only find the first occurrence of the characters which you are searching for. In order to make it find the second occurrence of the letters PECK you will have to change line 20 to

20 PRINT INSTR(A\$, "PECK"), 11.

When you RUN the program this time the number 30 will appear on the screen. This time the computer has started searching for the letters PECK as the 11th character of the string A\$. In other words, the computer will search through the letters EXCEPT A PECK OF PEPPED PEPPERS. So the first occurrence of the letters PECK, and that the P of PECK is the 30th character of the string variable A\$.

If the computer cannot find the characters that you are searching for in the string then it will return the number 0.

Breaks

The LEN command is used to find out the LENGTH of a string variable, or how many characters it contains. The short program illustrates the use of the command.

10 SGNLRL A\$ = "SUPER CALIFRAGILISTIC EXPIALIDUCIOUS" 20 PRINT "THE STRING VARIABLE A\$ CONTAINS".

30 PRINT LEN(A\$), "CHARACTERS".

As you can see, the string variable that you want to refer to must be enclosed in brackets after the LEN command.

Some DTP's article will be contained next month. The Computer is — Paul's computer is published by Sunshine Books at £2.95, and is available from bookshops or by mail order.

Clear graphics

Book: *Commodore 64 Games Book 1*

Author: Gregg Jansen
Publisher: Melbourne House
Price: £12.95

Reviewer: Phil Bannister

THE MAIN PROBLEM WITH

A book of programs listing and analysing games, especially when graphics symbols are included, and the difficulty of trapping how many spaces to include within PAINT statements. Gregg Jansen's book covers the use of line art both colour. Special versions of the graphic characters have been used throughout, and they really are crystal clear. Instead of spaces, strange font-like symbols have been present, which are very simple to read, and a checklist section is included to avoid the dreaded 'Space Error' message.

The program descriptions are similar to those found in many other books of games, but of these are simple arcade-style games which, though inferior to commercial machine-code products, are fun to play and make good use of graphics and sound. Some photographs are included; most of them have no colour, but the descriptions of the games are rather too brief!

There is also a very useful machine-code routine, presented as a basic loader, for moving games around the screen, with examples of use. This routine works very well and could easily be incorporated in one's own games programs.

All in all, this is an excellent publication of its type, which I can recommend highly.

Games galore

Book: *Clear Book of Games for Your Commodore 64*

Author: Tim Harries
Publisher: Jollies

Price: £12.95

MANY OF A LOT OF books of games, usually because they are usually only a collection of programs that didn't 'make the

grade', but with Tim Harries at the helm, the *Clear Book of Games for Your Commodore 64* could well be an exception. It is. There are 46 offerings including arcade, card, memory and maze games.

Some of the selections really are very good. *Worms*, *Alien Invasion* (a space racing game), *Bugz* and *Monster and Monkey* (one of the titles included) are four of the titles included. Some are wavy-around screens, some have various levels of difficulty and a couple make good use of the 3D effect. There is a Typing Trace program for those who wish to practice their keyboard skills. Each has an introduction saying what is required of you along with an explanation of how the program works. Some of these are fairly detailed and quite useful to anyone wishing to understand the use and nature of lines of code in a pixel programme. All the listings have been printed using the Vic 1020 printer's printer making them easy to read.

At £12.95, that's about twice price per program. They are considerably better than that price tag suggests. If you are looking for a book of games, this one is well worth considering.

Friendly start

Book: *Vic-20 Assembly Code*

Author: Bruce Smith
Publisher: Share Publishing Ltd

Price: £12.95

REVIEWER: David Shepherdson

This book is part of Silver's *The Friendly Micro Series*, and is on a subject close to my heart. To me it is not going to be a shock to Honeyfield's *Amiga Power*, rather the two would be read in conjunction. It is an easy book to read, as the author has a sense of humour which flows through from line to line. Regrettably, the programs appear in line form (poorly indeed) and escaped off a printer. While this makes for easier reading, it may allow many mistakes and omissions to creep in. In general, however, there are few if any explanations which should help to point to missing lines or segments in some lines.

In the program examples, the



code for the Machine Code is split into three columns, the first column give the decimal values, the second the hex and the third the decimal numbers and Assembly. One thing I found confusing here was that in places, the hex and Decimal values had been mixed up in the Assembly column, rather than switching to either Hex or Decimal.

One good point is that confusion between '0' and 'F' if it is treated as a zero is shown by using the computer's version (in decimal).

In general, this book is an excellent guide to Machine Code, just a few problems to be wary of, but a great book with which to start learning Machine Code.

Valuable guide

Book: *The Commodore 64 Handbook*

Authors: Peter Lapins and Trevor Robinson
Publisher: Cognex Communications

Price: £12.95

REVIEWER: Phil Bannister

Given the C64's more practical, with their hopefully enlightened User's Guide,

there has been a continuing flood of books which have tried to get things right. This publication appears at first to be just another, but when you examine it closely it proves to be far superior to the majority of such books.

The whole compilation consists of *The Advanced Commodore 64 Handbook* by the same authors, and the same high standard is maintained throughout. Up until it aimed for the beginner and provided enough material to keep him largely occupied for a long while.

In the first chapter ample information is given on setting up the machine and getting started. Then the authors march on through, step by step examination of basic programming. Chapters are also included which explore the 64's special characteristics of sound, sprite and bit-mapped graphics. To illustrate the subject matter program listings are included, some of which are highly sophisticated utilities, such as a sprite editor, a user-defined graphics generator and a database program. All of these are available on cassette from the publisher if required.

The usual appendices complete the book, which at £12.95 must be excellent value for money.



How to teach your Micro a thing or two

Thousands of home computer owners have yet to discover their microcomputer's potential to help with many of the problems and decisions that come up every day in the home or office.

Perhaps you have always presumed yourself that you would teach yourself programming, but have been put off by examples which seem to assume a lifetime spent studying computer science and mathematics. Maybe you have looked at other computer books, but have yet to find one which is free of unnecessary jargon or where the program examples bear some relevance to real life and not space invasions.

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Psychedela costs £14.95 for the Commodore 64 and 16 for the Vic 20 and C16. We've purchased *Psychedela* to offer free copies of the program to each reader.

All you have to do to enter is suggest a name for the 100 poems seen in the photo of Jeff in your answer on a POST CARD with your name address, and the Commodore magazine you read, and complete this bit below as in full, naming and original work in fifteen words or less. "Whosever poem I like the most because _____". Send your entry to *Psychedela*, simple stamp, Commodore Horovitz, 1001 2nd Street, Walnut Creek, CA 94598 USA or arrive by the last working day in February. Winners will be announced in the April issue. Standard competition rules apply. ■

The winners of December's *Eureka!* Awards Speech Synthesis contest are James Arnould of Ealing, T. B. Thomas of London, Stephen Shaw of Penzance, Bill Cave-Wallace of Isle of Man, Andrew Miller of Bedford, D. F. Argot of Elstree, Vic, D. R. A. of Bristol, C. C. Hines of Worthing, S. T. Edwards of Selwyn and Peter Gough of London. The highest entry from M. Col. Austin Kinnaird was 1128 words, called from the Oxford English Dictionary and all are supplemented over a three day period. The number of averaged at nearly 300 words. Each will receive a Compaq Speech 64 voice synthesis unit, courtesy of Domark, the creators of the *Eureka!* adventure game. ■

Tripping the light fantastic

John Williams, who has written a book on the art of writing poems, explains how to enter the *Psychedela* competition



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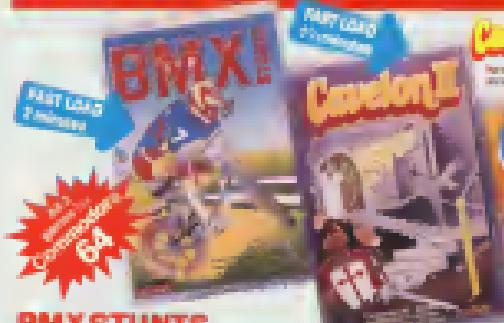
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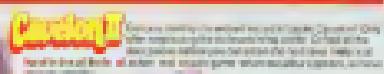
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QUARTI

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ANSWER BACK

Random access

I AM WRITING a program to generate code which requires a random number between 0 and 255. I would prefer to use the old random number generators, but I don't know where to find or how to use my computer already on the old memory. Thomas Hartl High Wycombe

Short

ANSWER: It is equivalent to BASIC's RND and needs the random number to be value dependent on BASIC. A constant value can be inserted using the CONST, but with inclusion code of a function to store value using next value directly like this: `LET RND=255`. This uses a formula to calculate a new random number leaving the result in PVAL and RND in RSP. This requires a complete procedure. `LET RND=RND+1`, was TIA intent to generate a true random number, except that, when steps are many short, they may begin to show regularities. Try this routine:

`LET RND=RND+(INT(RND*random number from 0))`
LDA RND
PVAL RND (resolving data bytes)
PVAL RND+1 = code component
system

PVAL RND

using three bytes excluding the registers.

For more detailed information try Barry Wren's forthcoming book *Programmatical Art*, which is due for publication in March.

Collision routine

I HAVE recently started writing a game on the Amiga involving the use of sprites. Could you explain the use of the offset and endpoint flags? I've read several books but none of them seem to be clear enough on the subject. Simon McLe

Answer

Short

TO DETECT collision between objects I think use the following:

100 V=2554
100 W=PICKUP-BRAND
N=0, THEN ...

and so we have the action of your program. Then will check to see if sprite number N has collided with another sprite or sprayer.

100 V=PICKUP+10AND
N=0, THEN ...

will check if sprite N has collided with a background character. All of the sprites can be checked in this way using the sprite number stored sequentially. If we need as your game there is no offset flag on CBM Basic. It may be that the books you have referred to are mentioning the different sprite register positions.

Picture music

IS THERE a skill and an interest in techniques of displaying a picture while loading it? I think by a machine code routine in commercial programs, is there any way to achieve the same effect in BASIC?

I would also like to know how to play music while loading

Steve Astley
Tunbridge Wells

Short

EASILY CREATE your pictures, along as on the last line of the program

that LOAD CONT?"

where "CONT?" is the name of the file name. In BASIC, the first program should be longer than the coded program, though this is not necessary if calling machine code. The picture will remain on the screen until interrupted by a new program.

Music while loading is possible in several ways. You could use the sound as a bridge in a machine code interrupt routine, in which case the user would continue playing while the new program starts executing.

A BASIC program can consist from and call a machine code program, while the user is playing, providing the new program does not load into the same area of memory as the basic program and its variables, arrays and so on. When loading

is complete the basic program will return, and this can be described in a BASIC cell in the new program using the familiar procedure of

100 A=A+100:A=2 THEN
RETURN
20 END end of program

Portable problem

I AM ONE of those people who could really make use of the Commodore 64's portable capability, since I am stuck on the road. I already own a portable C64 and a good deal of tape software but how can I connect the C64 to a 1/4" or 3.5mm cassette tape recorder?

P. Jagodzinski
Korona
Poland

THE EASIEST way would probably be this problem, since the 5.25" drives I have is easier part, and I haven't heard of any company offering to add one. All you can do is record your existing programs to tape, either by using a tape-to-tape transfer unit or by recording them through your software supplier. If disk version isn't available, then you will have to be prepared to pay extra, of course.

Screen clear

I HAVE RECENTLY learned programming on a C64 and cannot understand how to clear part of the screen. The program is a children's game which builds up a shape each time a question is answered correctly, but I could clear the previous one displayed and so on, not, in fact, prevent immediately. Below the previous question and answer if I type PRINT CHR\$(149) then clears the screen completely. Can you suggest how to solve this problem?

C.B. Roberts
Gatleyford
Glos

IN BASIC, using the HOME key as a reference point, you should use sufficient numbers of CIRCLE, SHORT and OUTSIDE DOWNTURN symbols in your input string (as prompted) to overwrite the previous question and answer.

Giving a prompt

CAN YOU GIVE me some advice on a program I am writing to predict percentage rates? I have produced the source because just a subroutine for performing the calculation. However, I do not see how I can bring the cursor to a particular position or a prompt for the operator to enter the figures.

B. Atherton
Cheltenham
England

AS THE A prompt moves, you should use cursor control codes to place the cursor in the right position. The basic key code is pressing LEFT to go left, and the cursor at the coordinates is placing the cursor there. The alternative would be to PRINT the values into screen memory by using LEFT to decide the current and converting to the POKE value.

Underline method

I SOMETIMES find I want to copy what I have underlined out, but when I run the program the underlining is still there always, disappears. Could you tell me how to get underlining in programs?

David Renshaw
London

THERE ARE two ways of getting rid of the underline. Firstly, the easiest is to highlight the underline with the DEL key and independently of the program is used to give these responses.

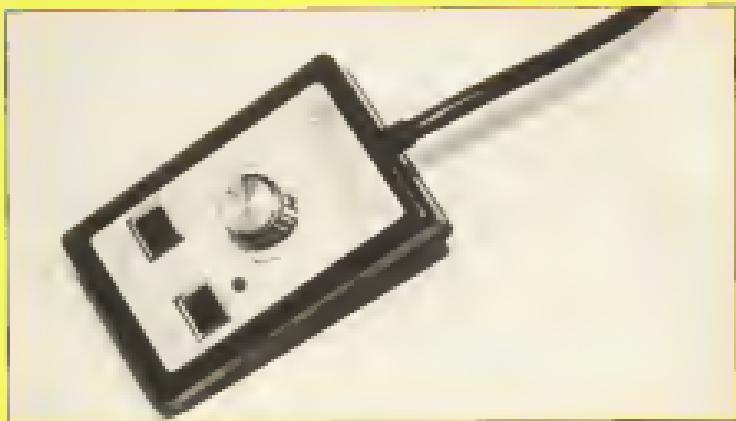
Secondly, you can use two programs which have the same effect to remove underlining, for instance,

DE PRINT "HLLLL"

where "T" represents the Commodore logic key with T, giving an underline character.

If you need help with a technical query or problem write to:
Jack Cohen,
Commodore Hercules,
18-19 Urlich Road,
West London,
W13 9PP

Dash for a Slomo



If you can't keep up with your Commodore 64, this handy gadget can slow it down to your pace — and there are five to win in our simple contest!

THIS MONTH's lucky winner will win Commodore's Slomo from Cambridge Computer.

The Slomo is a handheld screen display controller which lets you run the C64's cartridge port. In operation, it takes four unbreakable latches into the main's operating system, so a key which can be used by the user control board. In other words, Slomo lets you control the speed of programs as they run — slow them down, speed them up, or freeze them completely! And you can leave Slomo plugged in all the time.

It's great, and in these difficult winter games where the action is just too fast for you, or if you want to take screen photographs of your own programs, or your own graphics, you can freeze the action at any time.

The Slomo sells for £14.95, but all you have to do is win us a solve the Hell Mock puzzle.

Software has brought a set of pentominoes and the Micro Club for the others to play with. When they're correctly assembled, they form a square from which can be read the binary numbers, the Roman tally and the symbols. All the binary numbers have three

zeros to 0, and one to 5, but no number is the same as any other.

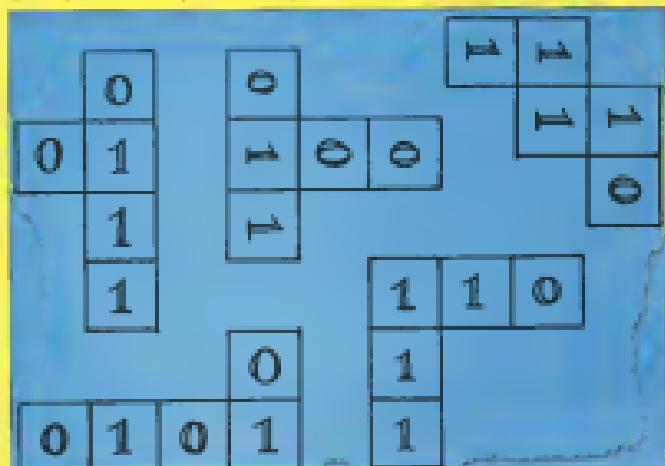
What you have to do is draw a diagram showing the 16-pentomino squares, and complete the 16x16 broken continuous shape, original and interesting tag in fifteen words or less. "Slomo out the past

before..."

When you have done that, send your entry on a POSTCARD, with your name and address, to Slomo Competition, Commodore Horizons, 15/13 Evelyn Newport Street, London WC2B 5PP, to arrive by the last working day of February. Readers will be

assessed in the April issue. Usual competition rules apply.

The winners will be the December Competition winners, Mr Joe Ryker-Green of Walsall, who will receive a Phant, and J D Pearce of Birmingham, who gets a C16, from Commodore UK. ■



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Alice IN VIDEOLAND



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Join Alice in her journey through Videoland - an enchanted place populated by strange creatures such as bread-and-butterflies and pipe-smoking caterpillars, where little girls change size and flamingos sum into croquet mallets.

Alice in Videoland is a revolutionary new concept in entertainment for the Commodore 64, incorporating some of the finest graphics ever seen on any home computer - accompanied by a charming musical score. There are four different game scenes involved, and your performance in earlier ones will affect your ability to get through later ones and determine your eventual overall score.

Scene One - Scouring the page graphics give way to the first game scene as Alice falls into the rabbit's Warren. Score points for collecting the objects once found there - including keys to open doors, bottles to make her smaller, cakes to make her bigger!

Scene Two - Out in the garden the Cheshire cat looks on as Alice meets the pipe-smoking caterpillar. Help her to catch the bread-and-butterflies and the rocking-home flies that change into the balls used in the croquet game. In the last scene...

Scene Three - Alice is a pawn in the chess game where her opponents are the White Queen and Twooldies and Twooldies. Help her across the board by protecting her with your White King!

Scene Four - The most bizarre croquet game ever! Help Alice hit the balls through the playing-cardholder hoops before the Queen of Hearts stamps on them!

Alice in Videoland is available for the Commodore 64 on disk - £12.95, and now on cassette - £8.95.

Alice in Videoland features graphics created with the Boris Pro.

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